

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

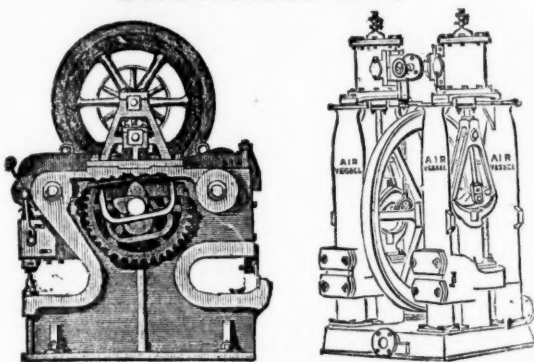
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No. 2219.—VOL. XLVIII.

LONDON, SATURDAY, MARCH 2, 1878.

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A NEW and INDESTRUCTIBLE ASBESTOS PACKING for
steam joints and glands, possesses an unusual power of resisting
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practically indestructible. Apply to—
THE PATENT ASBESTOS MANUFACTURE CO. (LIMITED),
31, ST. VINCENT PLACE, GLASGOW,
AND 10, MARSDEN STREET, MANCHESTER.

PARIS, BRONZE MEDAL, 1867. ORDER OF THE CROWN OF PRUSSIA. FALMOUTH, SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
Geographical Congress, Paris, 1875—M. Favre, Contractor, having
exhibited the McKean Drill alone as the MODEL BORING MACHINE
for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland
Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where
THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecu-
tive weeks, ending February 7, was 24-90, 27-60, 24-80, 26-10,
28-30, 27-10, 28-40, 28-70 metres. Total advance of south head-
ing during January was 121-30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tun-
nel, the McKean Rock Drill continued to work until the pres-
sure was reduced to one-half atmosphere ($7\frac{1}{2}$ lbs.), showing
almost the entire motive force to be available for the blow
against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these
Machines for the SEVERN TUNNEL; the LONDON AND
NORTH-WESTERN RAILWAY for the FESTINIOG TUN-
NEL; and the BRITISH GOVERNMENT for several Public
Works. A considerable number of Mining Companies are now
using them. Shafts and Galleries are driven at from three to
six times the speed of hand labour, according to the size and
number of machines employed, and with important saving in
cost. The ratio of advantage over hand labour is greatest
where the rock is hardest.

These Machines possess many advantages, which give them
a value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL
USE THROUGHOUT THE WORLD FOR MINING, TUN-
NELLING, QUARRYING, AND SUB-MARINE BORING.

The MCKEAN ROCK DRILLS are the most powerful—the
most portable—the most durable—the most compact—of the
best mechanical device. They contain the fewest parts—have
no weak parts—act without SHOCK upon any of the operat-
ing parts—work with a lower pressure than any other Rock
Drill—may be worked at a higher pressure than any other
—may be run with safety to FIFTEEN HUNDRED STROKES
PER MINUTE—do not require a mechanic to work them—are
the smallest, shortest, and lightest of all machines—will give
the longest feed without change of tool—work with long or
short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or
open work. Their working parts are best protected against
grit and accidents. The various methods of mounting them
are the most efficient.

N.B.—Correspondents should state particulars as to
character of work in hand in writing us for information,
on receipt of which a special definite answer, with
reference to our full illustrated catalogue, will be sent.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL,
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AIR COMPRESSORS.

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TUNNELS, SINKING
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IS THE
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DRESSING MACHINE COMPANY
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MR. GEORGE GREEN, ENGINEER, ABERYSTWITH
SUPPLIES MACHINES under the above Company's Patents for
DRESSING ALL METALLIC ORES. Dressing-floors having these Machines pos-
sess the following advantages:—

- 1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.
- 2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED
BY DRESSING-FLOORS IS REQUIRED.
- 3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND
FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.
- 4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN
FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom
and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines
Darlington, Colberry, Nantthead, and Bollyhope; the Stoncroft and Greywade
Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the
Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Esclair-
mwyn, and Ystumtun Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines,
Darlington; also Mr. Sewell, for Argenteous Copper Mines, Peru; the Brats-
berg Copper Mines, Norway, and Mines in Italy, Germany, United States of
America, and Australia, from all of whom certificates of the complete efficiency of
the system can be had.

WASTE HEAPS, consisting of refuse chate and skimpings of a
former washing, containing a mixture of lead, blende, and sulphur,
DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-
in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly
profit on our Nantthead waste heaps amounted last year to £600, besides the ma-
chinery being occupied for some months in dressing ore from the mines. Of
course, if it had been wholly engaged in dressing wastes our returns would have
been greater; but it is giving us every satisfaction, and bringing the waste heaps
into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines,
Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much
pleasure in stating that a full and superior set of your Ore Dressing Machinery has
been at work at these mines for fully a month, and each day as the moving parts
become smoother, and those in charge understand the working of the machinery
better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply,
and satisfactorily than by any other method."

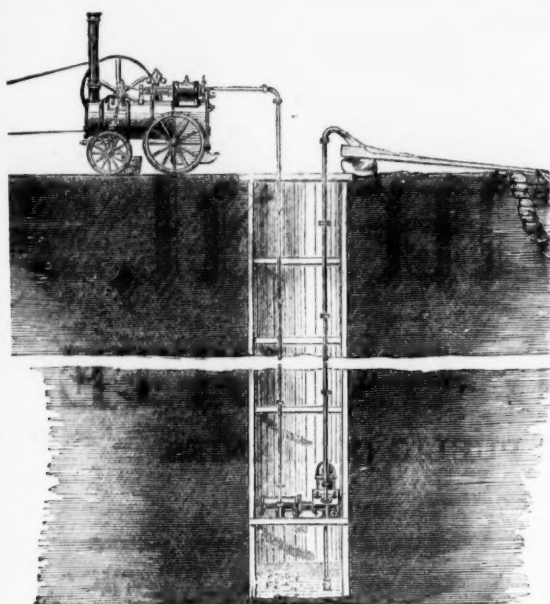
Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines,
says—"Your machinery saves fully one-half on old wages, and vastly more on the
wages we have now to pay. Over and above the saving in cost is the saving in ore,
which is a great short of 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The
separation which they make is complete."

Mr. MONTAGUE BRALE says—"It will separate ore, however close
the mechanical mixture, in such a way as no other machines can do."

Mr. C. DODSWORTH says—"It is the very best for the purpose,
and will do for any kind of metallic ores—the very thing so long needed for dress-
ing-floors."

Drawings, specifications, and estimates will be forwarded on application to—
GEORGE GREEN, M.E., ABERYSTWITH, SOUTH WALES.



THE "UNIVERSAL" STEAM PUMP,

FOR DEEP MINING AND COLLIERY PURPOSES, HAS NOW
STOOD THE TEST OF MANY YEARS' SERVICE, AND
OVER 7000 ARE IN USE.



MANCHESTER.



AUSTRIA.



FRANCE.



CORNWALL.



COLOGNE.

ECKINGTON, February 4th, 1877.
Messrs. HAYWARD TYLER and Co.,

GENTLEMEN,
In reply to your enquiry, the 15 by 7 Long Stroke Pump Messrs. Hayward Tyler and Co. supplied us with is working remarkably well; 7 feet suction, and forcing the water 180 feet perpendicular, with 40 lbs. of steam.

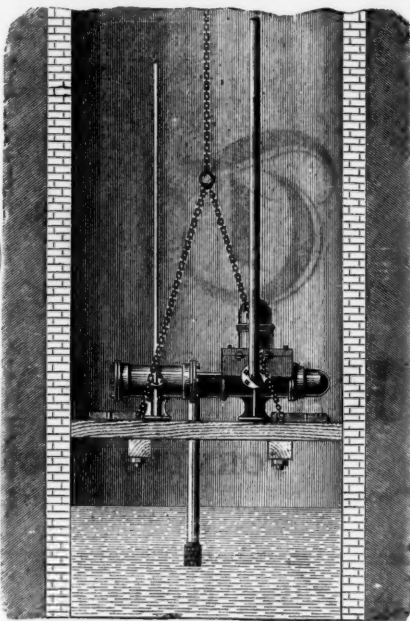
Before putting this engine in we had one H.P. Pumping Engine, 50 inch cylinder, 9 feet stroke, and firing six boilers, 38 feet by 4 feet, to drive it, now we only require two of the above boilers to do the same work with much less annoyance and attention.

I am, Gentlemen, yours truly,
JOHN MARPLES,
Engineer to J. and G. WELLS, Eckington Collieries.

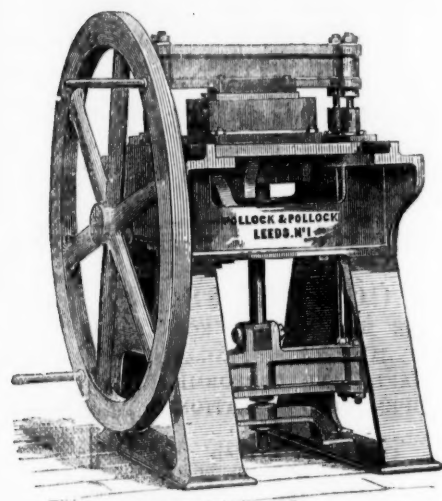
YATE COLLIERIES, near CHIPPING SODBURY,
January 24th, 1877.
Messrs. HAYWARD TYLER and Co.

GENTLEMEN,
In reply to yours of the 15th inst. (which absence prevented my attending to earlier), I am very pleased to add a testimonial to the efficiency of your "Universal" Steam Pump. The one you supplied to us has worked most satisfactorily for the past six months, without giving us the least trouble. It is lifting over 200 gallons an hour up a perpendicular height of 480 feet—going 30 strokes per minute, with a steam pressure of 30 lbs. per square inch—boiler 340 yards from pump. I can strongly recommend it as the most efficient pump for high lifts ever seen. I shall be very pleased to give information to any of your friends, or take them to view it working.

Yours faithfully,
EDWD. W. B. MONKS, Managing Director.



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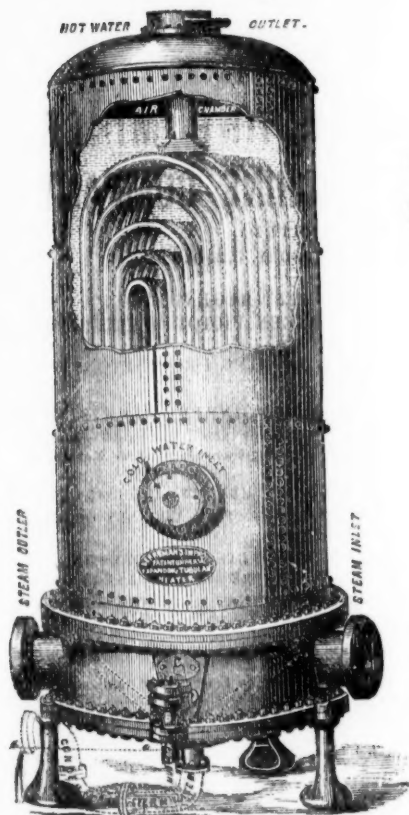
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Vertical and Horizontal Engines.

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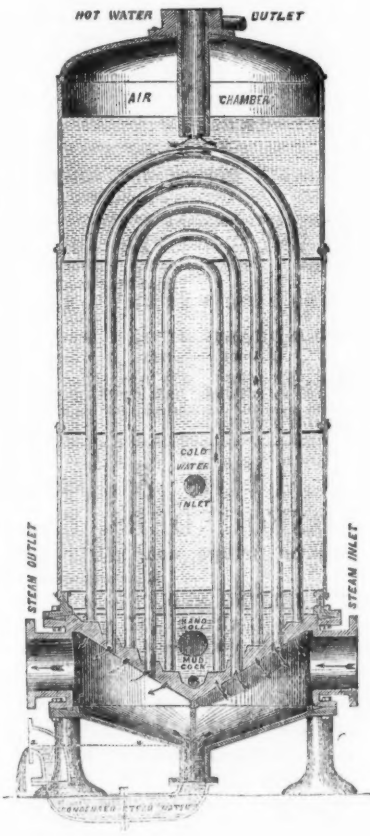
IMPORTANT.

JOSEPH WRIGHT AND CO.

(LIMITED),

NEPTUNE FORGE ENGINE
AND BOILER WORKS,

TIPTON, STAFFORDSHIRE,



Having purchased the Engineering Business lately carried on by R. BERRYMAN AND CO., at 23, Congreve-street, Birmingham, and 28, Wilson-street, Finsbury-square, London, have removed the whole to their Works at TIPTON, to which place ALL COMMUNICATIONS SHOULD IN FUTURE BE ADDRESSED, and where the BERRYMAN HEATER can be seen at work, and in every stage of manufacture.

Being the SOLE MAKERS and PATENTEES of these CELEBRATED COAL SAVERS and EXHAUST STEAM UTILISERS, and having remodelled and greatly improved them, adding largely to their HEATING SURFACE and WATER CAPACITY, J. W. and Co. have put down a special plant, which includes an entire new set of improved patterns, enabling them to offer these FEED WATER HEATERS to the public at

GREATLY REDUCED PRICES.

This arrangement of BRASS TUBES of a great length giving an enormous HEATING SURFACE makes this HEATER not only the MOST POWERFUL ever invented, but its FIRST COST PER FOOT OF HEATING SURFACE IS LESS THAN HALF THAT OF ANY OTHER. It will condense the whole of the Exhaust Steam from the Engine if required, and entirely does away with the NOISE and BACK PRESSURE from exhaust pipes.

ALL THE TUBES ARE OF SPECIALLY PREPARED SOLID DRAWN BRASS AND COPPER; both ends are expanded into the bored holes of the same Tube Plate, METAL TO METAL, and every tube is free to expand and contract independent of each other. Leakage is impossible, as, when the tubes are once fixed, nothing short of cutting out will remove them. No scurf adheres to the tubes because of the difference of expansion between SCURF and BRASS. The inside of the Heater can be washed out by means of the mud cock and hand hole whilst at work.

Only one pump or injector is required, and as the Heater is placed between the pump and the boiler, the water is forced, COLD, into it, and passes out at the top HOT into the boiler direct. Where the WATER WORKS PRESSURE is sufficient no pump or injector is needed.

The water being heated to BOILING POINT UNDER PRESSURE in the Heater, a saving of from 20 per cent. to 25 per cent. in fuel is effected; the disastrous results of grease in boilers are also avoided, the sewage and other loose matter in the water being deposited in the Heater, the acids are liberated there instead of in the boiler.

Every part can be lined with BRASS, COPPER, or LEAD, as may be required in special cases for heating water or any kind of liquor in large quantities for CHEMICAL WORKS, BATHS, WASH-HOUSES, AQUARIA, GREENHOUSES, BREWERIES, WOOL WASHING, DYE WORKS, TANNERIES, &c., &c.; they will also HEAT AIR FOR CUPOLAS AND BLAST FURNACES, and are now at work as INTERHEATERS for compound engines with direct steam from the boiler with a further saving of 15 per cent.

The New Price List, with detail information, is now ready, and will be sent on application, together with an Illustrated Catalogue, with references and testimonials from Firms using FOUR HUNDRED AND THIRTY-THREE of these Heaters.

Original Correspondence.

THE REASON WHY MASSES OF NATIVE SILVER ARE FOUND IN ARIZONA AND THE NORTHERN PROVINCES OF MEXICO.

SIR,—There is a great amount of incredulity as to the existence of the vast masses of native silver which have been reported to have been found at various times in the territory of Arizona and Northern Mexico. This doubt arises solely from the want of the knowledge of the physical alterations that have taken place in that portion of the western continent of America, which have not only induced great and important changes on the surface of that portion of its crust, but have caused marked mutations in the whole vast region west of the Rocky Mountain range; nor has this important centre range, with its base line extending from east to west over 445 miles, been free from the same influences, and in all human probability those convulsive changes were simultaneous, and passed through the whole continent from south-west to north-east, which is the course of the current of all volcanic effects in that portion of the globe.

In the year 1861, while engaged in the examination of the then newly discovered metalliferous district of the American continent, Colorado, in about latitude $39^{\circ} 10'$ north, and longitude $105^{\circ} 40'$ west, I came upon an extensive depression in the range extending from east to west about 23 miles, and in the widest part about 8 miles. It appeared as though a portion of a vast mountain had been sunk, or that the two halves of smaller eminences had been suddenly depressed by an earthquake, leaving the abrupt cliffs on the north and south extremities standing several hundred feet high, clothed with their ancient timber, whilst the depression was entirely covered with trees of a very much smaller and younger growth, the largest trees not numbering 400 rods of annular growth. This leads me to the conclusion that the great event which caused such vast changes in the Far West could not have occurred more than 500 years ago. This fact gives some clue to the probable date of the destruction of the large city, the ruins of which Capt. Sitgreaves found when on his topographical survey of the countries of New Mexico and Arizona in 1852, which was situated in latitude $35^{\circ} 16'$ north, and longitudinal $111^{\circ} 29'$ west, and the overthrow of which he ascribes to undoubted volcanic agency, and graphically describes it as follows:—

"Leaving the river (the Little Colorado) we passed along the base of high table lands, the lava-sand lying several inches deep upon the ground, filling up the hollows, and forming ridges across the plain; and on ascending the plateau found it also covered with lava detritus, and all the prominent points occupied by the ruins of stone houses of considerable size, and, in some instances, of three storeys in height. They are evidently the remains of a large town, as they occurred at intervals of an extent of 8 or 9 miles, and the ground was thickly strewed with fragments of pottery in all directions. The fact that no vestige of water could be found in the vicinity sufficiently accounts for their present depopulation. The encroachment of the lava-sand blown down from the adjacent mountains may have gradually filled up the springs and water-courses; it is certain, at any rate, that the heaviest rains would now be rapidly absorbed by it, and after a day or two leave no trace of water upon the surface. The houses resemble in all respects—except that adobe does not appear to have been at all used in their construction—those of the existing pueblos of New Mexico, and the pottery, of great variety of fabric and pattern, is similar to that in use among them. Pursuing our way still further into the mountains the ruins become of rarer occurrence, or else were concealed by the dwarf cedars with which the hills are covered."

It is most probable that at the same time the overthrow of this large city took place that portion of the continent underwent the great convulsion which rove asunder the rocks that now form the entrance into San Francisco Bay—"The Golden Gate"—and unwaters the valleys of the Sacramento and San Joaquin, which are evidently the bottom of a vast inland fresh-water lake, the extent and level of which are quite traceable, and the discharge of the waters of which lake was south of Monterey, as also cleared the canyon, which let out the waters that covered the Truckee Plains, and at the same time opened the fissures that emptied the internal sea, which is now known as the "Great Basin" of the interior, and other great changes that have taken place west of the Rocky Mountains at comparatively recent dates.

These facts above stated may appear digressive from the subject of this paper, but their comprehension is absolutely necessary to a clear understanding of that which follows. It is an undoubted and indisputable fact that the country where this ruin now remains a wreck of its former greatness is highly metalliferous, and it is certain that a city of such magnitude must have required wood for building, and fuel, and water for the use of its inhabitants, and it is, therefore, natural to infer that this part of the continent was as thickly timbered as the northern portion of Mexico and the southern portion of Colorado are at present, but we now find it devoid of both these necessary requirements for man's existence, the whole face of the country being covered with lava-sand and volcanic cinder. It is, therefore, reasonable to infer that all the standing forests extant at the time of the great catastrophe were consumed, and the whole extent of the surface of the country was subject to an intense heat sufficient to have the effect of reducing the argentiferous ores. This would naturally and ultimately fuse and liquify the silver, which would then run into the masses in which they have been found. The records of some of these masses are still to be seen amongst the ancient archives in the City of Mexico, in which are recorded *in extenso* the following facts:—That the largest masses of native silver were procured by the Mexicans from Arizona, about 150 years ago, when many masses of great beauty were obtained, the largest of which weighed the enormous amount of 3750 lbs. This circumstance induced the Mexicans to name the place where this and many other masses were found of less weight, "Las Planchas de Plata," or the planks of silver. The exact situation of this mine, or rather deposit, is not now correctly known, but is supposed to be somewhere in the neighbourhood of $31^{\circ} 30'$ north latitude and $111^{\circ} 30'$ west longitude of Greenwich.

The difference in the latitude between the supposed spot where these masses were found and the ruins of "Sitgreaves" ruined city is not of much consequence, as the heated metal would be deposited and come to rest in a less heated place than the spot on which it was fused, and the men who found them probably were not sufficiently acquainted with the science of topography to be able to set out the locality in a correct geographical position; any man who traverses a wild country can always tell when it is noon, and is, therefore, able to fix his whereabouts of longitude with a certain amount of accuracy. Let us follow up some of the facts found in these archives, showing how little the Governments of Mexico have promoted the development of their rich country. In illustration of this we will relate one notorious instance, which will give the history of all like undertakings connected with this unfortunate country.

An exploration was undertaken by some Mexican buscones (searchers), or, as they would now be called, prospectors, who proceeded northward to Arizona. In the course of their travels these men made important discoveries, and on their return brought wonderful accounts of the richness of the country over which they had passed, and in proof produced masses of native silver which they had found, one of which weighed 108 arrobas, or equal to 2700 lbs. English. The king made his claim for royalty on the produce of these explorations, which led to a long, expensive, and vexatious suit, resulting in a decree on the part of Philip V., dated Aranjuez, May 28, 1741, which terminated the prosecution by the Royal Fiscal against these enterprising discoverers of the treasure of Arizona, and, as a matter of course, prevented any further explorations. In this suit the description of the masses found designates them as balls, sheets, and other pieces, and gives their respective weights. The decree ends by declaring Arizona to be royal property, and as a "Criadra de Plata" (a place of the creation of silver).

Masses of native silver will continue to be found throughout the territory, more particularly towards the eastern portion, as this part of the country appears to have been most heated. These masses,

however, may not be found of such extraordinary weights as those above named, but these discoveries will not fully take place till the Navajo and Apache Indians allow the "white skins" free and undisturbed access into that portion of the territory. The tribes are not numerous, but they are very powerful, intelligent, and athletic men, and extremely jealous of the intrusion of strangers.

It has been a matter of great incredulity to many of our stay-at-home English that the aborigines of Santa Fé make the bullets for their rifles of silver, but whether this is believed in or not it is nevertheless true, and it simply arises from the fact that they have no other mineral from which they can procure any metal that would answer for that purpose within hundreds of miles; therefore, lead would be to them a much more expensive substitute, and, it may be added, that they have no means of importing that article, whereas they take the masses of metalliferous rock with which they are everywhere surrounded, build a kind of furnace, and with the charcoal made by themselves, assisted by the alkali which is found in such disagreeable quantities all through the deserts and sandy plains of the country, the ore is soon fluxed, and when the fire is out they have at the bottom of their rude furnace the metal required for their use.

It is fair to assume that Arizona was as rich in silver as both the northern and southern parts of the continent have been found to be both in bygone times and at the present period. Thus we find a range in the mountains situate in latitude $37^{\circ} 30'$, and extending from $106^{\circ} 40'$ to $108^{\circ} 20'$ longitudinal, which is named in the old Mexican maps as the Sierra la Plata; this indicates the known richness of that portion of the range at some indefinitely distant period, but we have recent evidence of its resources in the information that we are possessed of when Colorado gave in to the United States Government a return of its bullion produce for 1867 as \$12,000,000, the modern workings for the precious metals in that territory having only commenced in 1861.

As to the richness of the mines to the south of Arizona we have again to refer to the archives in the City of Mexico, the results of which are extraordinary when we know under what horridly severe restrictions the mines were worked when that country was under the oppressive rule of Old Spain, when the produce had to pay a duty of 20 per cent., added to which the Government held the monopoly of the quicksilver which it imported from Almaden, although an abundance of it could have been procured in Mexico; and beyond this the miners had to procure their coin for the payment of the goods they required from the City of Mexico, the transport of which cost them 20 to 30 per cent. according to the distance that it had to be taken. Thus, had not the mines been extremely rich they could not have sustained these extravagantly rigorous taxations.

As an illustration of the recorded wealth of Arizona's southern boundary, we will take some of the returns from the mines in Chihuahua and Durango. Thus the official registered yields give the Biscaina vein produced \$16,341,600; Santa Anita, \$21,347,210; Valencia, \$31,813,486; Rayas, \$85,421,014; and the Veta Madre vein, \$225,935,736. The Pavillion vein when first opened produced \$20,000 a day for five years, when a mountain torrent filled the shaft, and swept away the improvements; it was opened again, and in the succeeding ten years yielded \$60,000,000, when it was again abandoned in 1696, and not opened again till 1787, when it was vigorously worked for eight months; the ore taken from it at that period yielded \$11,500,000. The various members of the Fagaga family are estimated to have received in 50 years from the workings of two veins over \$16,000,000 in profits. The same records show that one Senor Zambrano, who was the proprietor of two mines at San Dimas in Durango, paid as King's fifths on the silver raised from these two mines from 1733 to 1807 the sum of \$11,000,000.

The Carmen vein, amongst the mines of Batopilas in Chihuahua, on the western declivity of the Sierra Madre, has produced enormous yields of silver; from this vein, amongst other riches was taken out three masses of pure silver, weighing collectively 870 lbs. The mines of Santa Eulalia, also in Chihuahua, has the registered yield from 1705 to 1737 of \$55,959,750, or an average of \$1,748,742 per annum, and from 1737 to 1791 the yield exceeded \$44,000,000, making a total in 80 years of \$100,000,000. This proves the richness of the district of country south of Arizona.

If any further proof were required we could give the evidence of the late Baron Humboldt, who after giving the yield of the Mexican mines from the time of the Conquest to 1803 as \$2,027,925,000, all of which he says was produced from a few spots, as mining was confined to comparatively limited circles; as also the report of Mr. H. G. Ward, the British Charge d'Affaires, which was published in 1827 by the English Government.

JACKSON BARWISE.

30, Grove-lane, Camberwell, Feb. 25.

MINING IN NEWFOUNDLAND.

SIR,—Owing to a protracted absence from town and a press of business I am obliged of late to deny myself the pleasure of communicating with you; but I trust my long silence will prove no barrier to securing a place in your valuable Journal. My chief motive in drawing the attention of the British public to mining in Newfoundland is the hope of enabling my country to emerge from the mists and haze that have for so long a time surrounded her, and show to the world that in this long-neglected colony a field exists for the profitable employment of millions of the surplus capital of the Old World. Few of your readers are, perhaps, aware that in this country, with an extent of territory about equal to that of England, there is not a house, a farm, a mining station, a mill, or any trace of civilisation at 10 miles distance from the sea-shore. As far as the territory of Terra Nova is concerned it is practically an unknown land. On every hand, however, evidences can be seen by the discerning eye pointing to the fact that we are fast awakening from this lethargy, inspiring the hopes of patriotic Newfoundlanders of one day seeing their country take a front place amongst the aspirants to future greatness.

From Betts Cove we learn that great success has attended the operations of the company during the past year. Shipments from that quarter reached the enormous total of 45,000 tons as against 18,000 tons for 1876. Notwithstanding the low price obtained for ore in Swansea it is believed that the sum realised must have reached one-quarter of a million sterling. It must be remembered that this is only the third year that workings have been made on this property, and I am credibly informed that the energetic manager has in contemplation the shipment of 60,000 tons during the season of 1878. It is pleasing to note from latest accounts that no diminution is yet apparent in the vast walls of ore visible on every side of the mine; but, on the contrary, new discoveries are being made from time to time all over the property. In rear of this mining claim exists a tract of country extending northwards something like 20 miles to the waters of White Bay—bleak, barren, and mountainous—on which human foot has never trod, except when covered with snow or when the noble deer has been traced and hunted by the wild Indian in search of food. Throughout this wild district there exists, no doubt, untold wealth to be reaped by a second energetic and speculative Ellershausen.

From the geological formations apparent on both seaboard scientific men are convinced that in this tract of country will yet be found the great bulk of copper to be produced by Newfoundland for the world's use. It is safe to say that from South-West Arm on the west, to Cape St. John on the east, and northwards to the bottom of White Bay and La Scie there exists a mineral country which if it formed part of Southern Africa or Central Australia the pluck and valour of British energy, combined with British gold, would long since have made this wilderness a hive of mining industry, rewarding the pioneers and speculators with a rich harvest for their pains. In this one locality alone there is ample room for twenty large companies to operate on.

Since last I wrote you I have been shown an analysis of galena made by Prof. Tatlock, of Glasgow, giving 79 per cent. lead, with 37 ozs. of silver to the ton. This ore was taken from Catalina, Trinity Bay district. I have never seen a better sample of galena from any part of Newfoundland, not excepting the La Manche Mine, which has been worked and robbed for 20 years. If the veins, of which there are many, continue to increase they may reasonably look for good results if sufficient capital can be found to work the

mine with vigour. Parties now in possession are not able to do this of themselves, so we must look outside for the sinews of war. The mine, I am told, is in the market, and I believe if any of your friends were disposed to undertake a venture of this sort very favourable terms could be had from present owners.

By advertisements in our local papers I find that the far-famed Union Mine, Tilt Cove, is to be sold to the highest bidder next September. It appears that some misunderstanding has arisen between the owners, Messrs. Bennett and McKay, necessitating the sale of the mine. Several offers have been made by eminent firms in England and elsewhere for the purchase of this property, but so far without results. One firm, I am told, has named 130,000*l.* sterling as their bid. Whoever may be the purchaser a pretty snug price will have to be paid, as the property is well and favourably known, and believed to be not inferior to Betts Cove itself. The plant in connection with the mine is all that can be desired, giving every facility for producing and shipping ore to almost any extent. Its estimated value is 30,000*l.* sterling; this amount includes, of course, buildings, wharfs, &c.

During the past summer several valuable seams of copper ore have been discovered in Notre Dame Bay, the most prominent being that made by Captain Grouman at Hall's Bay—an inland arm of Notre Dame. By last mail I had a letter from him stating that he had been more than ever successful in his operations, and expressing the belief that by the opening of navigation another addition would be made to the great mines of Green Bay. We all wish him unlimited success, and trust his discovery may be the forerunner of many such in that section of country. The two companies located in South-West Arm have displayed during the past season a lack of energy most surprising considering the prospects they have for developing paying mines. True it is one of the companies last year sunk three shafts, one of them to the depth of 10 fathoms, which yielded them about 80 tons of 10 per cent. ore. At this depth they had a seam of pure ore 3 ft. 3 in. wide, with several smaller veins of from 1 to 3 in. in width throughout the shaft. The only reason that can be assigned for this inactivity is the rumour that one of the companies, or perhaps both, are in treaty with parties in Swansea for the working of the mines on a royalty. It is to be hoped that some arrangement will soon be made, so that this valuable district will also resound with the busy thud of the miner's hammer. Had an energetic company the control of those sets a second Betts Cove or its superior might be found in this picturesque and romantic region.

My letter has already assumed too lengthy dimensions to proceed further with notes on Mining in Newfoundland, so I will for the present conclude by stating that our Legislature is on the eve of opening its annual session, when I trust some healthy legislation will have the attention of our law-makers resulting in some lasting good to our "Island Home."

L. B.

St. John's, Newfoundland, Feb. 5.

AUSTRALIAN TIN.

SIR,—The very intelligent and well-written letters on the above subject by Mr. Mufford, which have appeared in your valuable Journal, and to which Capt. Tregay has called attention in last Saturday's issue, have laid all interested in tin mines under a debt of gratitude to Mr. Mufford. I write this to suggest that the Mining Association of Cornwall should solicit Mr. Mufford to read a paper on that subject before the Association at Camborne or Redruth. Than Mr. Mufford no better qualified traveller can speak on this all-important question. A paper read before an audience of intelligent and practical miners would elicit information and data exceedingly interesting, and well worthy of that society's publication with the assent and approval of Mr. Mufford. Of the extent of the geological formation productive of tin or its nature it may be too early to pronounce a definite opinion, yet every evidence before us would lead us to suppose that the richest parts of the known fields have come to market. Whether the tin streams of Australia and Tasmania are alike, Dart Moor and Porellis Moor almost devoid of tin-bearing lodes, or whether they are the centres of a metalliferous strata which may be more conducive to larger and richer veins or lodes as they approach a different stratum, is a question of intense interest not only to all miners, but those who take an interest in our colonies.

Capt. Tregay hopes for a better price for tin, and gives us some grounds for his hope. I cannot conceive how anyone can doubt that that time will come, and may come very suddenly. The consumption within the last quarter of a century has doubled, and likely to still further increase from new applications. It may not come during the extreme commercial pressure now pervading the whole earth; it may be unreasonable to expect it, but let us hold on with that resolution which supposed to be characteristic of an Englishman—never to know when we are beaten. The bowels of the earth never presented more wealth and greater promise of increased riches at greater depth than at the present time. The means of working away the mineral as cheaply as the future promises never existed. A cheaper and equally powerful explosive is our greatest need for production, and that must come. Let us then hold firm, and not despair of sunny days again.—Feb. 27.

H. W.

SAFETY-CAGES.

SIR,—The constantly recurring accidents in hoists and safety cages should suffice to cause the utmost possible attention to be given to the construction of safety-catches in connection with them. The cages used in mines are already tolerably safe, because the only risk of danger is the falling in case of the breakage of the ropes, or the breaking up of the cage amongst the head gear in case of overwinding, but from the way in which hoists are usually arranged the danger is much greater, as from their extreme simplicity the application of safety apparatus is considered unnecessary. Hence we have such results as that which occurred yesterday with the Grand Hotel lift at Paris, where two persons were killed through the balance weight becoming uncontrollable. Now rapidity of ascent is, no doubt, some recommendation, but to be projected from the court-yard to the roof with the rapidity of a cannon ball is too great an improvement. Knowing the lift in question well, I may say that the number of accidents with it are very few, and not one, so far as I am aware, has caused death, though sometimes an unfortunate passenger has been left in suspense for an hour or two. Now, it must be obvious that the recurrence of these accidents would be rendered practically impossible if both the rising-room and the counterbalance weight be furnished with guides and safety-catches, and a small trap be made at the top of the rising-room for at once releasing the occupants.—Feb. 26.

INVENTOR.

ROCK DRILLS.

SIR,—It has frequently been stated in the Journal that considerable economy is to be anticipated from the substitution of machine drills for hand labour, yet I am creditably informed by engineers who have been actually in charge of works that except where a long drive has to be made through a very hard rock the use of the machine drill really involves a loss, and this is given as a reason why even in the St. Gothard Tunnel all except the two forward ends on each side is done by hand labour. Now, at St. Gothard they have an enormous quantity of compressed air; and, what is more, could increase that quantity to almost any extent, and at a mere nominal cost, because the compression is effected by a large mountain torrent—the River Reuss, I believe—which merely runs down to the Vierstattersee, if not utilised, so that one would have thought that if machine drilling could be exclusively used any where it would have been at St. Gothard.

I think, too, Mr. Darlington stated that it was only in quite exceptional cases that machine drilling could be used; and it is very certain that the first cost of establishing air-compressors, steam-engines, and the drills themselves is so large that a considerable quantity of work would have to be done before the original outlay would be compensated. This will, probably, account for the objection which Cornishmen have raised to machine drilling. They know that, although with the machinery all in operation and paid

for, the cost per fathom is less than by hand-labour, but taking twelve months or two years working they are satisfied that no profit has yet been given that any saving can be effected.
Feb. 27.

CALCULATOR.

ROCK-BORING MACHINERY

Sir,—Messrs. Le Gros, Mayne, Leaver, and Co. overshoot the mark entirely in characterising my remarks on the finger-drill as absurd. The absurdity of the thing rests with those who made the unscrupulous assertion that "admirable results" had been accomplished, when only three 2-ft. holes had been bored in ten days. I can well understand that the publication of this fact would be "cutting" to the proprietors of the drill employed, especially if they inspired the statement. The compressor used in conjunction with the drill was the Reliance, which, of course, must be too reliable for any interruption in that line.
J. BARKELL.

Rushen Mines, Isle of Man, Feb. 26.

TREATMENT AND SEPARATION OF ORES.

Sir,—There is probably little necessity for discussion as to the relative priority of the inventions of Mr. King and Major Bolton, as I believe they both occupy the same office in the Broad Sanctuary, and would, therefore, not have much difficulty in settling their respective rights; but the question, to my mind, is whether at the time the first of these inventions was introduced there was any real novelty in the matter such as could form the subject of a patent? I well recollect that many years ago an absolutely identical arrangement was introduced, and very lengthened articles descriptive of it were published in the Times, as well as in the *Mining Journal*. I need scarcely say that I allude to the Chancellorsville Freehold Gold Company, who erected large works at Fudsham, and the magneto-separation machine invented, as I believe, by Col. Josiah Harris, who is now chief Government Inspector of Mines in Peru, formed a very prominent feature in the plant. Perhaps Capt. Barkell will state whether he ever saw the Chancellorsville machine in operation, and, if so, I should like to learn in what respect he considers it inapplicable for the separation intended.
J. J. H.

Feb. 26.

METALLIFEROUS MINING IN NORTH WALES.

THE GREAT DYLIFFE MINES.

Sir,—In the Supplement to the *Mining Journal* for Feb. 16 there appeared a letter on the above mines and district by a correspondent who signs himself "Caractacus," which shows that the writer has some knowledge of the district, but is not so correct in what he says about the mines that he calls "Old Dyliffe." My object in writing is not to answer his letter, but to state before the readers of the Journal some interesting and important facts connected with the history of the above mines. The workings have been carried on on these different lodes named the Dyliffe, Llechwedd-du, and Esgairgaled, and there is a very interesting history to be related in connection with the workings on every one of these.

The commencement of the workings on the Dyliffe lode dates, we suppose, as far back as the Roman era, at least we are certain that much is done on that lode before the discovery of powder, and that much silver-lead was taken from those workings before they went deep. In the 18th century the mine was carried on by one proprietor after the other on a small scale for upwards of 100 years, but when the deepest workings from surface came down to a depth of 50 or 60 yards the expense of raising the water and stuff was too much to keep on that plan. About this time we understand that the lady who was the proprietor of the mine then decided on driving a cross-cut from the north side of the hill under the mine to drain it, which is the present great adit level, and is about three-quarters of a mile in length, and it is not unlikely that by driving that level the Llechwedd-du lode was discovered, which has proved itself after that the richest lode in the district. About 45 years ago the mines fell into the hands of Mr. Hugh Williams, late of Machynlleth, and Mr. John Pugh, late of Aberdovey. For the first years the Llechwedd-du lode was their chief point of operation, and, in fact, the riches they found in this lode went very far to make up their fortune. But at present we will confine ourselves to the various discoveries made from time to time in these mines, and the proprietors found it very tight many times to keep on from one discovery to the other.

The first discovery of any importance on the Llechwedd-du lode was made about 40 years ago, in a winze sunk on the lode at a depth of about 12 fms. below the adit. The ore in that winze was 3 ft. 6 in. solid lead; but we understand that it was not more than 6 ft. long for some time, but following that bunch down led them to a great body of ore, which caused the Llechwedd-du engine-shaft to be sunk, and of further developing the mine. After sinking the above shaft down to the 25 the proprietors then determined to send a cross-cut north from the shaft to the great Esgairgaled lode, a distance of about 40 fms., which was proved by former workings to be very rich in the workings from surface, and was abandoned because of water. That cross-cut, 35 years ago, was driven far enough to cut the south joint of the lode, but there was such a stream of water coming from that joint that it was feared then—the water-wheel for pumping being not very powerful—that the mine would be drowned, and the cross-cut was abandoned for 10 years. But after having a more powerful engine the cross-cut was re-started 25 years ago, and after much difficulty, the ground being hard and wet, it was at last driven through the lode, at a point where it was 9 fms. wide; but, very unhappily, they found no ore in it worth valuing, and it was abandoned again without driving on the lode, only sending the cross-cut through it, and it remained so for about eight years. About this time it was determined to drive east from cross-cut, and in a few fathoms of driving a string of lead ore 18 in. solid was discovered; and following that further east for about 15 fms. the string of solid lead ore was more than 3 ft. wide, from which place in a very short time some thousands of tons were taken. But after working with great success for some years it was thought that all the lead that was to be found in this lode was taken off, and it was abandoned again for some years. About the year 1870 six men were fixed to strip a little of the lode to the west of the point where the cross-cut above referred to went through it, and in a few weeks of stripping a very rich run of ore was discovered to the west again, which proved equal to the former discovery on the same lode to the east, both of which were left for many years after driving within a few feet of each of them.

In the history of the workings on the Llechwedd-du lode also there are many interesting facts to relate about it. After sinking the Llechwedd-du engine shaft everything went on very successfully under the management of the late Captain Williams until the 60 fm. level was driven; this level was driven east and west from shaft on the lode, but was poorer than the levels above, and the owners and all connected with it were much afraid that the mine, after being so successful in the upper levels was now coming to grief. The best run of ore, to the east of the shaft, was about 70 fms. from it, in that direction, and in some of the levels above it was sometimes about 18 in. solid lead, but, unhappily, in the 60 it was not more than one-third of that, and much shorter too. And to try to ascertain whether this run of ore was continuing to go down or not, a winze was then sunk on it, which, after going down about 2 fms., went through the ore to a very soft shaley ground, and no sign of any more of the riches found above. And, to complete the mishap, the engine-shaft was sunk to the 75, and the eastern level from there was driven wrong on some branch lode, and found nothing, and on the supposition that the 75 east was on the lode it was looking dark indeed.

About this time there was a change in the management of the mines, and one of the first acts of the new management was driving the 60 forward east to virgin ground, and commencing at the same time an underhand stope on the bottom of the same level—both sides of the winze just referred to—and it was found by doing so that there was a string of solid lead 3 ft. wide in less than 4 ft. to the winze, and which after that opened to be richer, taking everything together, than anything ever seen before on this lode; and by continuing driving the 60 forward a new run of ore was discovered—the richest that was ever discovered in these mines—by working on which the Messrs. Bright, Cobden, and Co. made such enormous profits. On the Dyliffe lode the workings were carried on by every company, but not with such success as the other lodes, that lode from the adit to the surface being of a bunched character, not much to be depended upon; but when the mines fell into the hands of the Manchester Company it was decided at once to sink an engine shaft on the boundary line between Dyliffe and Dyfnwgm, from which 35 fathoms below the adit a cross-cut was driven through the lode. A nice run of ore was discovered, which made this part of the mine at once one of the richest portions of it, and the same run of ore continued through all the levels to the bottom of the present workings. In the last eight months there is a trial made on a fourth lode that is generally called the "new lode." It runs east and west the same as the other lodes. The Dyliffe lode is to the south of it, and the Llechwedd-du and Esgairgaled lodes are a little to the north. This lode, as well as the Llechwedd-du, was discovered by driving the Dyliffe great adit, but that cross-cut happened to go through it in a place where it was not looking very well. But now looking over what has been done in the course of the last few months it is only fair to add that there is not a single trial in the whole district that can show such a pile of nice lead ore from such limited workings. The general opinion is that a cross-cut ought to be sent to it from the Llechwedd-du lode at once at a certain depth and at a certain point.

By carefully looking over what has been done with good results in the past, there are many excellent lessons learnt for the future. One thing worthy of notice is we find as a rule where the lodes have yielded most, opposite the very richest bunches, that the lodes are of a very unsatisfactory character in the upper workings on it. Another thing is we find that much depends on the character of the rock that the lode runs through, it is not enough to have a good lode, it is an easy thing to have plenty of them without being nothing better of them. We do not ignore geology for the reason that we are not learned in theory ourselves, but we meet with many things underground that will set the best geologists of the country at a defiance.
A MINER.

METALLIFEROUS MINING IN NORTH WALES.

THE OLD DYLIFFE AND PLYNLIMMON DISTRICT.

Sir,—About 1½ mile nearly due north of Old Dyliffe is the Bryn-fedwen Mine, worked at present by a local party, and may be really considered for so short a time, and on so small a scale as the present workings, to be a great success, for in the very short time it has been at work, with only some three or four men, about 20 tons of silver-lead ore has been raised, and is now nearly ready for market. But this is not so much a matter of importance as the future prospects and opportunities of opening up a great lead-producing mine at this place. Geographically, it would not be very easy to meet with a property presenting finer opportunities for driving adit levels on the course of the lodes, being a cheap mode of development where it can be adopted. Some six or seven levels may thus be driven on the course of the lodes into a very high hill, or, more properly speaking, a big mountain, leaving from 12 to 18 fms. of ore-bearing ground between each level.

Bryn-fedwen has been worked on a small scale at different times for, perhaps, more than a century past, but the work done by each party has been only very small, and the capital brought to bear on the property been evidently altogether inadequate to do anything like development; indeed, it is doubtful if there has been anything that could properly be defined as capital ever at any time in connection with the place, and it is to be regretted that Bryn-fedwen had not been selected by capitalists, seeing how they have frequently lavished away many thousands of pounds upon places that never deserved a cent's worth of trial. And as I have stated in one of my former communications to the *Mining Journal* when more care and skill are brought to bear on the selection of places for the expenditure of mining capital we shall hear less of those disasters and being brought to grief of mining companies, for I do maintain that with good and careful selection of a mining property, or mining properties, followed up, of course, with good superintendence and a judicious and prudent laying out of the capital, mining would not only be as safe as any other undertaking, but in the long run far more profitable than almost any other.

At Bryn-fedwen I noticed two very strong east and west lodes, having large quantities of gossans on the backs of the lodes at surface; another very strong lode intersects those east and west lodes at an angle of 25° north-west, which I look upon as a very favourable feature in this property, to expect large deposits of lead ore in the deeper levels.

There is, also, in the almost immediate neighbourhood of Bryn-fedwen Mine, the Caetan Mine, and on the same lode, a short distance to the east, the Caconroy Mine, worked for several years with great success by Sir John Conroy. Both the latter mines deserve much more than a passing notice, but as my letter has run to more length than I intended it should I must leave any further remarks I wished to make respecting this section of the Plynlimmon district to some future time.—*Llanidloes, Feb. 26.*

CARACTACUS.

LLANRWST LEAD MINE.

Sir,—I presume that no one beside Mr. H. G. Sharp who has read the correspondence between him and me will conclude that his letter in the Supplement to last week's *Journal* is any answer to mine of the previous week. He has carefully evaded my numerous interrogatories addressed to himself and "Inspector," and proceeded to treat of irrelevant matters in no way affecting the issue between us. I can scarcely conceive he is sincere in pretending to believe that I considered "Inspector" and himself were one and the same person. I take that to be a lateral move to escape a direct issue, having no desire to discuss the matter with me on its merits. I could have informed him who furnished the information, and who fabricated that remarkable report.

Mr. H. G. Sharp's letter in last week's *Journal* is dated Feb. 22, in which he complains of not being able to obtain an order for his agent to inspect this mine. Now, I would like to ask him if he did not know, at the time he penned that all but untruthful statement, that his agent was here making the inspection, or that he had been here on the previous day, for he occupied two days in doing so, and could not have done it thoroughly in less time. The false position assumed by Mr. Sharp here is made more indefensible by what is added. He says—"I cannot but conclude certain parties connected with the company are afraid to have the mine inspected by disinterested practical authority for fear he should not endorse the astounding reports given by interested persons." It is difficult to conceive of anything more egregiously reckless than the above paragraphs, penned two days after his agent had left London to inspect the mine. He then goes on to state—"The report I sent out cost me sundry guineas; it may not have been put together in a miner-like style, still I have every reason to believe it was truthful." I can only say in respect of this that if it was not put together in a miner-like style it ought to have been, as its author has appended to his name no less than six initials. With regard to the guineas, I know just exactly how many passed from "Inspector" to his informant.

Again I ask Mr. H. G. Sharp if he saw "Informant's" answer to "Inspector's" long list of questions, although I have no doubt he did, and if so for what purpose or from what motive were so many of them suppressed and distorted, and why does he still contend that the mine is too poor to allow of its being inspected by an independent disinterested party, and that it has only an ephemeral existence, depending on puffery and inflated reports? His agent was here inspecting the mine at the time he wrote that jumble of heterogeneous inconsistencies, and also on the previous day. Surely prudence, if he possessed a particle of it, would have dictated his waiting until his agent's report had been received; but his impetuosity and virulence appears to know no bounds. I asked Mr. H. G. Sharp in my last letter to publish "Inspector's" long list of questions put in such categorical form to his "Informant," and the answers received thereto. He has not done so for very obvious reasons. He preferred to sputter about in dirt to raise a dust cloud

in order to dim the vision of observers and obscure truth. I venture to affirm that the answers to "Inspector's" questions would form the framework of as good a report as I ever wrote of the mine, and that is the reason why "Inspector" and Mr. Sharp decline to publish them. Seeing Mr. Sharp's reckless style of writing, some of which I have recently had occasion to peruse, I have ceased to be surprised at any act of his which would be decreed unseemly in others. But I am surprised at "Inspector's" coalition and intrigue with him. One word in respect of myself; he rashly charges me by implication with being a jobber of shares in the mines I manage. First at Ludcott and then at Llanrwst. Concerning Ludcott, he states—"I am not aware how many shares Capt. Knapp held or bought at a few shillings, or sold at 28%." To which I reply not one, nor ever did anything to influence the market value of the mine. "In the Llanrwst share list he (meaning myself) stands for 400 shares, at what cost I cannot say." I will enlighten him on this also—at par, and have never sold one or had the intention of doing so. I further inform him I never was a jobber in shares in either my own or any other mines. It will, therefore, be seen what his statements and insinuations are worth.

Mr. Sharp affirms in the concluding paragraph of his letter that—"No mine in the world was ever puffed up like Llanrwst; that it has taken some dozen firms to write this property up," &c. Now, I have a copy before me of Mr. H. G. Sharp's Investment Circular dated February 4, 1878, a perusal of which convinces me—supposing the dozen firms referred to have been in active operation, which I do not believe—that he single-handed is equal to the whole of them in that line. Therefore, I cannot see what he has to complain of, unless he is desirous of monopolising the whole business.
Llanrwst, Feb. 26.

ROBERT KNAPP.

CARDIGANSHIRE MINING IN DEPTH.

Sir,—As this is a most important subject, and one that has been often mooted in the *Journal*, and very varied opinions expressed thereon, it affords me some amount of pleasure in being able to say that the opinion of my late brother, myself, and many others, which has been often stated, that the veins of Cardiganshire would continue rich as long as the clay-slate in formation, and which is supposed to go considerably more than a mile in depth, lasts uninterrupted is being fully borne out. For instance, New Bronfloyd from its situation, being 121 fms. from surface, is the deepest mine yet wrought under sea level. The last report gives the yield of ore for 5 ft. as 1½ ton per fathom, and likely to improve. The lode is from 20 to 30 ft. wide, and when stripped down to its full width will no doubt be found as rich as, or richer than, ever it has been in the upper levels. I was underground here a few weeks ago, and was greatly pleased with the appearance of the lode in the bottom; its character in every way was better than in any other place seen throughout the mine, which undoubtedly, in a manner of speaking, will prove as permanent as the hills in which the veins are encased. The mine is looking well altogether, and has an excellent field of machinery—a point of primary importance in all mines, but more especially where mines have to be worked containing veins of the magnitude here referred to. Rather more than a mile further up, and south of New Bronfloyd, we find the South Darren, under the 100 fm. level, producing ore rich in silver, worth from 3 to 4 tons per fathom; in fact, depth has proved the mine to be much richer than it has ever been, and now they have a good field of machinery erected a long and prosperous career is before them. The next mine to the south—Cwm Erfin—with a complete field of machinery, has not reached so deep as either of the two mines mentioned by 50 fathoms, and although hundreds of thousands of pounds worth of silver-lead ore has been extracted, was stopped by the last company, although they had extracted 175,000 lb. worth of ore, and gave profits of between 30,000 lb. and 40,000 lb. from it, on the supposition that the ore was unbottomed. The position of this set may be seen by my Map of the Cardiganshire Mines, together with the Bwlch United, which was started only a few days ago, and under precisely similar circumstances to those of Cwm Erfin; in fact, the mine is not so deep as Cwm Erfin. They are not surpassed by the richest mines ever worked in this county, and which have yielded millions of pounds worth of lead and silver ore.

I trust this letter may be the means of dispelling any illusory views as to Cardiganshire mines holding down in depth—one of the greatest absurdities that ever entered the heads of mortal men.
Goginan, Feb. 27.

ABSALOM FRANCIS.

CARDIGANSHIRE MINES.

Sir,—It is quite refreshing in these dull times to see the correspondence and testimonials of so many authorities of mining in your valuable *Journal* last week, all bearing witness of discoveries made very recently, and also to read the exceedingly good epistle of "Caractacus" relative to the Great Dyliffe Mine and the Plynlimmon district; and if the writer would favour the mining community with a few more letters on the same subject they would, I am sure, be carefully read, and ought to be thankfully acknowledged. The map I advertised in the *Mining Journal* as being now ready would tend greatly to show where good mines should be, and where they undoubtedly will be found, as their situation cannot be misunderstood by any shareholder in any mine in Cardiganshire. It often happens that good, and I may say the richest and best, mines remain on hand for years when they can be obtained for a small outlay, until by force of circumstances by valuable discoveries being made in the mines surrounding them the fortunate holder reaps greater advantages than he ever dreamed of. If anyone will look at the map referred to and the position of the Cwm Erfin Mine he cannot but feel convinced that its position is scarcely equalled by any other in the county. The mine is a very shallow one, and I safely say success appears to be a certainty, and which opinion would appear to be confirmed by the courses of ore now being opened out at South Darren, New Bronfloyd, and the improved prospects of East Darren. I can fully endorse the statements contained in Mr. Chapman's letter as to the value of the discovery at the Cambrian mines. It is one of the best made that has come under my notice for 40 years. I was also much pleased with Captain Andrew Williams's remarks on the several mines named by him, which I fully concur in. I was also pleased to hear of the discovery at the Ystumtean Mine, which will greatly affect the value of the Tyn-y-Fron Mine as well, being on the same course of lodes. I am also much gratified to hear of the re-starting of the Bwlch United, where you will soon hear of important discoveries being laid open. There is no question on this point whatever; I fully believe that it cannot be otherwise, and before we are much older we shall hear of other mines following their examples, and with equally good results.
Goginan, Feb. 25.

ABSALOM FRANCIS.

GREAT WEST VAN MINING COMPANY.

Sir,—Although one of the original shareholders in the Great West Van Mining Company, I have hitherto abstained from taking any active interest in its affairs; first, because for some time past I have looked upon it as doomed to destruction; and next, because my stake being very small it was not, to my mind, worth the time and trouble involved in striving to unearth the past, with the very doubtful chance of being able to improve its future prospects. However, after reading the passage of arms between Mr. Ward and "Fairplay" (P), I am ready to join any of the shareholders who will support Mr. Ward's demand for a searching investigation into the whole history of the undertaking; for the letters signed "Fairplay," professing to be written by a human angel who has no interests whatever to serve but the good of a company to which he has not the misfortune to belong, seem to me to point out clearly their origin, as well as their object; the latter being to prevent any investigation which might lead to unpleasant disclosures; whilst Mr. Ward's letters have an honest ring about them, stating facts, regardless of the evil construction that might be put upon them by disinterested gentlemen who assume such high sounding titles as "Fairplay," and who hope by base insinuations to discredit him in the eyes of his fellow-shareholders, and so keep them from assisting his efforts to obtain an impartial committee of enquiry.

If in the views here expressed I am wronging anyone who is, or has been, connected with the floating and management of the com-

pany I can only apologise, and recommend the former to prove the hollowess of such suspicions by courting a full enquiry, and thus proving that the Great West Van Mining Company is a brilliant exception to the general rule—that it was a legitimate offspring of an unfortunate parent—that it has lived an honourable life, and is dying an honourable death. If such can be proved, my only excuse for this letter will be that out of a list of 18 mining companies in which I have invested money the Great West Van is one of only five survivors, none of which are paying, or ever seem likely to pay, any dividend to their expectant shareholders; whilst on every occasion that I have taken the trouble to search for the origin of the fatal diseases which have brought about such untimely endings, the result has been the discovery that, to use the very mildest terms, the success of the mining operations was not a matter of the first consideration with those who were present at the birth of the promising child, and who undertook to guide its tottering footsteps from its cradle to its grave.

H. C. SEDDON.

Elgin-crescent, Feb. 27.

GREAT WEST VAN.

SIR,—It is unbecoming of me to answer the letter signed "Fair Play," which appeared in last week's Journal, and especially so since I have an intimation as to who the writer is—a busy-body. Foolish assertions and perverse statements are not arguments, but they are natural when honesty of purpose is forgotten and when truth is ignored.

W. WARD.

Stock Exchange and Old Broad-street, Feb. 27.

BWLCH UNITED MINES.

SIR,—It will be gratifying to all interested in legitimate mining to hear that, notwithstanding the depressed state of commercial affairs generally, a first-class company has been formed for working the celebrated Bwlch and Pwll Rhenedd Mine sets, immediately to the east, and on the same lodes as the Goginan Mine. According to a map recently issued by Capt. Francis these lodes have already yielded returns of lead ore to the value of nearly two millions, and it cannot be too generally known that Bwlch Mine is 18 fms. above the Goginan deep adit, and the present returns from the latter mine are obtained from 70 fms. below that point; the future results of reworking the Bwlch Mine with the ample means at hand will, no doubt, justify the confidence of the highly influential and practical parties who have taken the property in hand. On going through the mines a few days since I was much pleased at the activity apparent in altering and renovating the machinery, and in other respects, and with the existing energetic and economical management there is little doubt that ere long this mine will resume its former position as to returns of good silver-lead ore.

Feb. 28.

MINER.

THE MINING INTERESTS.

SIR,—Capital and labour are the two great forces of society, and whenever they become severed incipient distrust ensues, requiring time only to ripen into panic, subsequent confusion, and, lastly, anarchy, that paralyses all action; hence enterprise and trade succumb to the natural laws which regulate States and individuals alike. In Great Britain we have a population of 5454 to the geographical square mile, while that of Russia is 230 or thereabouts only. We have a teeming dense population to feed, while that of the Muscovite is sparse and meagre to a degree. From our surplus wealth we have advanced them some 180,000,000 sterling—a sum ample to cover twice over all the gains and profits which could possibly accrue from all our exports and imports with that country since the termination of the Crimean war. Again, the money lent to Turkey far exceeds the profits of all the trade and commerce, coupled with the exports and imports, which have occurred with that people over the same period. It is out of the savings of this thrifty and industrious nation that arise the wealth to equip and generate the wars between those two inhuman communities. Our markets are glutted with the promissory bonds of these defaulting or bankrupt nations, while our trade, manufacture, and industries at home are rendered prostrate and unprofitable through the shameful use and application of the money which we foolishly lent them. The same sum would have opened out the resources and unbounded wealth lying dormant at the Cape, Canada, Australia, New Zealand, and other colonies that would directly have advantaged our own race and materially strengthened the Mother Country. But, no; we must supply the necessities of Turkey, Russia, and others to compete with us in the markets of the world, and grant them free trade with us, while they shut us out of their markets through the imposition of iniquitous and prohibitive duties on all of our manufactures and products. Nor is this the worst view of the case—for, in our opinion, the possession of Constantinople and the Straits by Russia is simply to cripple our trade with the East, and absolutely to stifle all future expansion. Hence, at any cost in life and treasure, we must encounter and stop the Muscovite in his career of spoliation and aggression. Mark—t—frightened to death by sudden and abnormal events present the true opportunity for the profitable investment of money. Capitalists who possess money at command or in a form convertible at an hour's notice should ever avail themselves of such opportunities, yet it is likewise essential that with the possession of money they should also possess nerve and intelligence as well. Investment to become of practical use must be searching and earnest in its character and application in respect to the merits and prospects of all undertakings under consideration. They should be thoroughly investigated and their true position realised. The prices of metals are abnormally low and depressed, yet all must know that the maintenance and progress of civilisation, manufacture, locomotion, and every description of enterprise require and absorb metals and minerals; hence, in the course of natural requirements, materially and socially, a reaction may set in, and then no class of property will experience such a rebound as that of home mining. The tin mines of Cornwall were never richer than at present, while materials, machinery, and labour stand greatly reduced in value; again the exigencies of the times have called into practice principles of economy and of mechanical boring and other machines, which will greatly facilitate operations and lessen costs of production. These are important desiderata, and owe their birth entirely to the depression so long protracted and baneful to the miner. The contentions between capital and labour have awakened invention, and hence many practical and economising machines have become in use; these cannot fail to benefit mining in the future. Dressing appliances have been greatly advanced, while the arts and sciences have become powerful auxiliaries, and chemistry more generally understood and appreciated. We may, therefore, more readily determine successful results, and enter the arena of mining pursuits with minimum risks, and especially so in respect to the ores of lead and blende, as the many promising progressive mines now upon the *tap's* fully demonstrate; as, for instance, in Cardiganshire we have the Grogwinion, Tyn-y-Fron, Blaen Caelan, Temple, Bronllyd, Li-burne, South Darren, Caron, Court Grange; with Pateley Bridge, West Pateley Bridge, East Craven Moor, and West Craven Moor, in Yorkshire; D'Eresby Mountain in Carnarvonshire; and several mines in Scotland.

Tyn-y-Fron, 1½ to 1½, continues to open out well, and the shares are in fair request, more especially so when regard is paid to the exceptional depression so generally prevailing. The lodes are proved to be highly crystallised, and charged with lead and blende. The workings are carried on by adits, development is cheap, and the manager practical and earnest. Good results are certain to follow.

Blaen Caelan United (Lead), Cardiganshire, are likely to command a prominent position—in fact, there have been already 10,000l. worth of lead ore sold from above the 10, and the 20 has laid open 40 fms. of ore ground, with 10 fms. of backs, worth 2 tons per fathom, or (say) 800 tons of the value of 10,000l. in reserve, and this reserve is greatly augmented through the evidence of continuity in depth in a winze down 8 fms. below the 20, and for the part of the lode carried it is worth 30l. per fathom. In the 10 and 20 there are two shoots of ore which approach each other in depth; hence it is thought highly probable that the winze referred to above is entering upon a large and continuous body of ore below. The machinery is ample for drawing, pumping, and dressing purposes, up to 40 or 50 tons of

lead per month, and the works are amply rich to furnish the necessary ores to commence with. The shares are 8000, of 3l. each, and in demand at 4l. Temple, at 2½ to 3, is in fair request; the ores are discovered, and the future of an unusually defined and promising character. D'Eresby Mountain, at 55 to 60, is likely to create sensation; the discoveries appear to be of a substantial and permanent nature, while the public watch with lively interest the development.

Grogwinion possesses all the elements of continuous prosperity. South Darren appears also to open out well. The future is most encouraging. Li-burne shows renewed evidence of vitality; this great and important property is of a most recuperative character.

In conclusion, there can be no question that lead mining is in a most progressive and expansive position, and offers tempting inducements to investors at the present moment. Markets are depressed and purchasers scarce, hence all feverish speculation has disappeared. There is a time to buy and also a time to sell, and we are greatly mistaken if a favourable reaction in the prices of metals and mining shares is not imminent.

R. TREDNICK,

Dealer in Stocks and Shares.

Exchange, 66, Coleman street, London, Feb. 28.

COST-BOOK SYSTEM, AND LIMITED LIABILITY.

SIR,—I quite agree with Mr. Erwin in many of his remarks in last week's Journal. I have had several years' experience in both systems. The Cost-book System, like many others, is much abused, and never more so than when accounts in their true state are not produced at meetings of shareholders; sometimes merchants' bills are kept back, and a month's working cost, but all sales of ore, and in some instances computed amounts for ores, credited, in order to give a formidable appearance to the credit side. Even shareholders at times attending meetings are sometimes led astray as to the real position of the concern, but what can be said of those unable to attend, who, on receiving the statements of accounts, believe that matters are improving, and increase their holding accordingly? The Cost-book System works well where the whole of the accounts are kept strictly up to date, and a supplementary account produced, showing assets and liabilities from such date to the day of meeting of shareholders. These accounts should be printed, and circulated to every shareholder, showing the actual position of affairs. In my opinion, to create public confidence in the Cost-book System, it would be well for the shareholders in appointing their purser, the principal officer, to hold him personally responsible for any accounts omitted from the general statement; if this were done, or some such mode adopted, the public would look upon statements of accounts with that satisfaction and confidence which does not now appear to exist.

Another very important matter is, I believe, universally omitted from this system—an inventory of all machinery, plant, &c., giving a description and cost price of everything on the works; this should be written up, and produced at every meeting of shareholders, and a certain percentage, as may be arranged, should be deducted periodically for depreciation, the amount of such depreciation to be debited in the accounts, and posted in the ledger to the credit of a depreciation fund, &c. By this means a fund would be created gradually (scarcely to be felt by the adventurers) for replacing worn-out machinery or for any additional plant, thus obviating the necessity of making heavy calls, and at times when people are least prepared for them. This also applies to dividend-paying concerns, and prevents the whole of the profits for a certain period being swallowed up by new or additional machinery. Any shareholder can withdraw from any concern under this system at the end of the same month in which he gives the purser notice of his intention so to do; his liability thereafter ceases. The assets and liabilities are then ascertained up to that date, and he receives or pays, as the result may be, in accordance with the number of shares held by him. Each shareholder is also personally liable for the whole debts of the concern, but he has a lien upon his co-shareholders; this is an extreme case, which need never arise if shareholders attend to their own interests as they should do.

Limited Liability has its advantages and disadvantages. The capital under this system is always stated, and a person enters it with his eyes open as to the extent of his liability under the most unfortunate circumstances. All calls being made by the majority, there is no alternative left for the minority but to submit to pay calls to the extent of their shares until the whole capital is exhausted. The only comfort left is that they cannot possibly go beyond that amount. The Cost-book System compared with Limited Liability, supposing there be no market value for the shares of either concern so conducted, would be in favour of the former, as a shareholder can determine his liability at the end of any month he likes, whereas in the latter, supposing a shareholder to have ten 5l. shares, he will be compelled to sacrifice the 50l. without any alternative if in the minority.—*Carnarvon, Feb. 28.*

THOMAS WHITE.

LIMITED LIABILITY V. COST-BOOK.

SIR,—Your correspondent Mr. E. Erwin, in speaking on this subject, set out apparently with the intention of proving two things. The first was that I knew little or nothing about the rules and regulations that govern the Cost-book system, and in the second implying that he knew a great deal about these things. Whether he has done either I will leave your readers to judge. I must take the liberty of saying that I do not think that Mr. Erwin has so carefully read my letter as he might have done, or he would not have made the mistake to suppose that I spoke of the Limited Liability System as perfect, for I distinctly stated that it was a perversion of language to call many things that went under that title by the name. What I contend for is the principle and not the mere term. I am quite open to admit also that many gross frauds have been perpetrated under the Limited Liability System, as well as we know is the case under the Cost-book. But two blacks do not make a white, and it would be as ridiculous to argue from this fact as to object to the laws of the country because there were found people who violate them. The great difference in principle between the two systems may be illustrated in this way.

Two companies are brought out, the one on the limited and the other on the unlimited method. The Cost-book mine has 10,000 parts or shares upon which a few proprietors—the promoters—make a call of 1l. per share, but they agree among themselves that no shares shall be issued to the public under 2l. per share, thus making the real capital of the company 30,000l., with power to add as much more as they think proper. The limited company starts with a capital of 30,000l., of which 15,000l. is reserved for working, and the remaining 15,000l. is divided among the projectors, but these latter have no power to call up a single shilling more than the shareholder has agreed to pay.

Now, while there is a great difference between the power placed in the hands of the two bodies, there is only a difference of form in respect to the money that they divide. To say that in the one case the mine has only to earn a dividend on 15,000l. as the premium is not capitalised is mere hocus pocus. To the investing public who have paid 2l. for their shares, it is both tantalising and cruel to say that they are only 1l. paid. They as truly represent a total of 30,000l. as two half-pennies represent a penny, but with the addition of an indefinite number of calls nearly always apparently timed so as to secure the maximum of exaction with the minimum of convenience to the shareholders. Now, Sir, under the Cost-book System what is to prevent an individual from getting a lease at a small royalty, keeping the whole of the shares to himself at first, and by dint of puffing, &c., to sell any number at whatever price he likes? Having got the speculative public well in, he has a heavy lien upon their pockets for an indefinite time, for by packed meetings and dummy shareholders, which it is very easy to manufacture, he is "monarch of all he surveys" at any meeting that is called by the adventurers. It stands to reason that people whom he induces to take shares are unwilling very often to relinquish them at an early stage. They cannot, indeed, bring themselves to believe that their investment was quite so foolish as they are now almost compelled to admit, and thus they struggle on, hoping against hope, and facing each call as it comes upon them, until too often they are completely crushed with the accumulative burden.

I must say again, these things are not fancy but fact, and can be attested by thousands of people into whose soul the iron of the Cost-book iniquity has entered deeply. But this same thing could not have happened under a properly conducted limited company, and when it is said a properly conducted limited company it does not mean one upon which only 50 per cent. of the capital has been called up. In my opinion no company should have the right to call itself limited which has not seven-eighths of its capital called up. If it is thought that it may be necessary at some future time to have more capital, power to create five or six shares could be taken in the Articles of Association without suspending a sword of Damocles over shareholders in the shape of virtually unlimited right to call upon them whenever these directorial magnates think proper. How your correspondent can make it out that the Cost-book System, even when conducted on the most satisfactory basis, can "enable a shareholder to determine his liability in a fair and legitimate way," I am at a loss to conceive.

It would, no doubt, require a very elaborate process of reasoning to prove, and I should be sorry to ask him to put him self to that trouble for the purpose of illuminating my obtuse understanding. Evidently Mr. Erwin is not acquainted with certain practices which are said to have been pursued by some mines in Cornwall in keeping back many thousands of pounds of merchants' bills in order that a dividend might be declared, and that the shareholders might be lulled into a false security, to be afterwards dispelled by a heavy call, after those who knew the real position of the company had disposed of their shares.—*Cornhill, Feb. 28.*

M. F. DORMER.

ANOMALIES IN MINING.

SIR,—Much credit is due to Mr. Josiah Wedgwood for his letter in the Supplement to last week's Journal on this subject. I fully agree with the method he advises for economising at Bedford United Mines, for at present it is highly necessary that shareholders should be relieved as much as possible from paying heavy calls for the sake of maintaining in nice securities the party who form, as Mr. Wedgwood very properly designates them, the "triple alliance." I fear, however, that Mr. Wedgwood is far too sanguine in his closing remarks, for I totally fail to see any grounds whatever for his saying "I am still persuaded that good things are in store for those adventurers who have the patience to wait the termination of the present crisis." Will Mr. Wedgwood kindly inform your readers why he thinks there are good things in store in these mines? It is a well-known fact that heavy calls were paid by the shareholders for driving, sinking, and rising to cut the ore ground into blocks to make it so easy and inexpensive for stopping and taking away as one could expect the present manager to think of, yet, if I mistake not, the ore from these stopes is costing within a trifle of its value to break and make marketable. I am informed that the driving, sinking, and rising are nearly suspended in order to so lower the cost that the ore from the stopes shall be made to meet it if possible. These stopes cannot last very long, and when they are done 1s. 6d., 2s., and 2s. 6d. calls may have to be levied again to discover more ore to take away in like manner, therefore I cannot see a foundation for Mr. Wedgwood's hope. I fear "those shareholders who have the patience to wait the termination of the present crisis" will have some such legacy left them in Bedford United as Russia has left Turkey.

I know many hundreds of shares in these mines were sold to a broker in London some few months since, and although I have no doubt the broker and one, if not more, of the "triple alliance" did well by them. Henceforth, however, I hope that no one will purchase shares without first having the mine and everything belonging thereto, and its manner of working, thoroughly inspected, then give notice in the Journal of the following week of his intention. Can Mr. Wedgwood inform me whether or not Dr. Foster has been made acquainted with the condition of the ventilation here? The men in these times cannot say anything; therefore, for the sake of their health, it should be investigated.

AMOS CROOKSHANK.

MINING IN EAST CORNWALL.

SIR,—Many attempts have been made to develop the mineral resources of this part of the county, and many prizes the result, but for the last 20 years but little has been done to open up the lodes in unexplored or virgin ground, the efficient prosecution of some of which would unfold riches equal to any yet laid open in the West of England. A large masterly lode, varying in places from 20 to 30 ft. wide, skirting the Rough Tor granite between Bodmin and Camelford, can be traced for miles, throwing out in places at surface large boulders of true copper gossan, shallow depth of working in such places being only requisite to open up a rich district for mines of that mineral. This great lode is intersected by well-known cross-courses, to which not a little is to be attributed the immense accumulations of copper ores met with in the Devon Great Consols and other rich mines. Moreover, elvan courses of correspondingly crystalline character to those in connection with the great body of mineral found in the Cambrian and Gwennap district accompany the great lode spoken of. Not far from this I am told a little is being done to develop a copper lode in Sir Henry Onslow's land by that enterprising man Capt. Thus, Durra, who is driving an adit level into a hill on a large lode producing good gossan, the sure precursor of ore. Probably the same amount of money spent in sinking a shaft on its course below this depth would gain for the proprietors the desired object. I have often known large deposits of copper passed over by too shallow working, although such trial levels are sometimes desirable in determining the proper spot to erect the permanent machinery. This mine I hear possesses the elements necessary to the production of copper by the presence of cross-courses and elvans, the value of which in the selection of a piece of mining ground cannot be overestimated. Such mines are more likely to lead to profitable results, and for less cost than the re-ascertainment of old deep mines, and to such enterprises we must look for Cornwall's future in mining.

Cornwall, Feb. 27.

CHAS. BAWDEN.

CORNISH MINING—CIRCUMSTANCES WHICH AFFECT THE METALLIC PORTION OF LODES.

SIR,—In different districts practical men are accustomed to form different expectations from the presence of certain characters, and those which in one are thought very favourable in another are considered unpromising; generally, however, this difference is confined to minor shades, easily recognised by the eye, though perhaps not quite so readily described. By far the larger part of the mineral wealth of this county occurs within a distance of two or three miles on either side of the line of junction between the granite and slate, yet no part of the line itself seems to have been more productive than any other spot of equal extent within the distance already mentioned; and, though the lodes often run for several fathoms with granite on one side and slate on the other, or with either of these rocks forming one wall and elvan the opposite one, yet the portions so contained between dissimilar rocks are not generally the richest—examples of which occur in several mines in the Gwennap district. But the metallic contents of the lodes are affected, not only by the mineral composition of the contiguous rocks, but by their mechanical structure and positions also. Whether the rocks be granite, slate, or elvan their hardest portions are always quartzose, and in these the lodes are seldom rich. This may be either because a hard rock is unsuited to the presence of metallic minerals, or because the lodes when traversing this quartz rock partake of its nature, and thus afford no place for the reception of other substances of greater value; but, whatever may be the cause, the fact is at least well ascertained. In granite a fine-grained rock is always an unfavourable indication and if that rock—which is of a coarse texture—contains large, white, and sharply-defined crystals of felspar it is equally so; on the other hand, if the rock be neither very fine nor particularly coarse grained, and that basis consists of greenish felspar besides the other usual ingredients of quartz and mica, the character of the rock is considered a very favourable one, and from the lodes traversing it there are fair expectations of their containing large deposits of copper and tin ores. The varieties of elvan, usually most favourable to riches in the lodes, differ slightly as regards tin and copper ores. In the former they are sometimes

tolerably productive, even when split into strings in hard quartzose elvan; whilst in the latter, unless the rock be soft and somewhat inclined to decomposition, the lodes split, dwindle, and become unproductive. Having given a few remarks relative to the circumstances which affect the metallic portions of lodes in the granite, I hope on some future occasion to resume the subject by some remarks on the circumstances affecting lodes traversing the slate rock.

St. Day, Scourier, Cornwall, Feb. 21.

CHAS. BAWDEN.

HINGSTON DOWN CONSOLS.

SIR.—It is satisfactory to find, from a letter addressed to the shareholders by Capt. Richards, of Devon Great Consols, that he has been prevailed upon by a large body of shareholders to appeal at the next meeting to the "sense of justice and honourable dealing" of the company in reference to the treatment he has met with during his illness, when it was probably conjectured that he would be unable to act in his own defence, and in the protection of his own interests. The present and former well-remembered attempts to displace him and his brother, Capt. Thomas Richards, from the superintendence of the mine will, doubtless, be traced to the same source. For the sake of other mine agents, who have suffered from a system of tactics which has become proverbial in a certain London office, and has reached the now somewhat renowned "triple alliance" on the banks of the Tamar, the time has arrived when a firm stand should be made. Hingston Down Consols is entitled to have its effective complement of agents, the payment of the merchants' accounts, for very "special reasons," should, again, pass through the regular channel, and the general arrangements of the company should be based on the sound principles adopted in old-established mines. All capricious interferences would then be kept in check, and this extensive and valuable mine would again take its stand as a well conducted property.—Feb. 24.

ANOTHER SHAREHOLDER.

SOUTH DARREN MINE.

SIR.—Owing to a slight error in your report of my speech at the Parys Mountain meeting, there appears to be a contradiction between my statement of the profit at the South Darren, and the figures quoted in your issue of the 23rd ult. What I stated was, that owing to improvements in the machinery and a better system of management generally, our profit for February was expected to be 5000.—not that we were making a monthly profit of that amount. The February sale included a three months' parcel of copper, in addition to the usual monthly lead returns; the average profit would, therefore, be about 3000 a month. I may say that I have devoted considerable personal attention to the erection and alteration of the machinery at this mine, and that it is now in a state of efficiency which will favourably compare with the best mines in the county. In view of the good results obtained even with the present severe depression in the metal market, I have every reason to congratulate my fellow shareholders of their possession of such a valuable property.—Lavender Bank, Farningham, March 1.

THOS. BUSH.

TRELEIGH WOOD MINE.

SIR.—This mine is in the manor of Treleigh, in the parish of Redruth, the land of Dr. Michell and Mr. Chadwick. Its depth is 58 fms. under adit, which is 33 fms. from surface; it is an extension from Wheal Mary old mine adit. The royalty is 1-20th; the pursuer is Mr. T. B. Laws, of London, who is connected with several other mines. The manager is Capt. Wm. Goldsworthy, formerly of South Herodsfoot Mine, near Liskeard, and brother of Captain Goldsworthy, of Bedford United Mines. I heard a very favourable statement concerning his ability as manager, and those persons who want to be satisfied on that point are hereby recommended to visit the mine, and judge for themselves. The pumping-engine is a 60-in., the stamping-engine 30-in., lifting at present 32 heads, but the total number is 48. The present returns are from 12 to 14 tons of black tin per month. There is only one lode worked on, and that is one of unusual width—about 40 ft.; Wheal Harmony lode is north of this a short distance. You remember that "Harmony and Montague" jointly was started about seven years ago, but was soon wound-up; the promoter, however, obtained his object—a good premium. The dressing appliances in this mine appear to be very perfect; there are 14 round buddles, 30 self-acting frames, and 10 other frames (old sort). The number of shares was originally 5500 (6s. 1s. per share paid-up), but whether all was paid on that number of shares I cannot say. No call has been made since the present manager's appointment—about 12 months ago. The late Capt. Hosking preceded him in the management. There has been a recent valuable discovery at the western end in the 34 fm. level, where the lode is 30 ft. wide. This mine is situated about 1 mile westward from Wheal Prussia (a very rich mine, belonging to Capt. Wm. Tregay and others), and 1 mile in nearly the same direction from Wheal Peavor, another rich mine. With tin at the old price of 90s. per ton, or more, how wonderfully rich the adventurers in these three mines would become.—Truro, Feb. 27.

R. SYMONS.

THE CLAY TRADE.

SIR.—Over-production appears to be the cause of the great depression in the trade in clay; also in that of tin. High prices in any commodity where the resources are not restricted are sure to lead to the other extreme, because competition is the result. Henceforward, therefore, low prices of clay are sure to rule; consequently riches will not be made so rapidly, if at all, as in days gone by. Many of the St. Austell clay merchants have made fortunes, but those persons who have recently entered into the business must be content with moderate profits. I could never understand why the clay at Rosemellyn is quoted at 24s. per ton, and other clays, said to be about the same quality, are quoted at 15s. Perhaps some of your readers can explain. I have not been at Rosemellyn lately, but I have been informed by a mine agent who has that since Mr. J. H. James, C.E., of Granpound-road, has been the superintendent a most material improvement has taken place in the mode of working, and who thinks that ere long the works will become profitable by economising the expenditure, which in times past has been somewhat reckless: so that the total outlay has been enormous. There are no less than, I believe, four steam-engines at work! Surely a less number should be made to do the work. I have heard that Mr. James intends to reduce the number.

St. Austell, Feb. 28.

OBSERVER.

ACCOUNT-HOUSE EXPENSES.

SIR.—Your correspondent, Mr. Erwin, is in error in supposing that I advocate the exclusion of all account-house expenses. I agree with him and with the late Mr. Michael Williams that it is likely, occasionally at least, to benefit the adventurers by the interchange of ideas on mining subjects between the agents assembled in social intercourse over a glass of grog or a cup of coffee. I remember that the late Mr. Williams dropped into Poldice account-house one afternoon (not a pay-day) when the agents were sitting down over their glasses, when he said—"I am glad to see you together, captains, enjoying each others company and talking over mining matters," and then he sat down with them and joined in the conversation. What I wished to show your readers was the great reform that had taken place in the habits of mine agents, and in the expenditure, which was formerly excessive, in that department. Your correspondent surely does not approve of extravagance, and the reference to the old state of things need not offend him as no man now living is implicated. The late Mr. John Williams, of Scourier, used to charge the adventurers 12s. per month for each agent for his expenses, in addition to those of the usual pay-day and account dinners. One agent of his, after pay-day, absented himself from the mine two or three days and Mr. Williams heard of it, and sent for him to come to Scourier. He came at once. "I have heard Capt. —," said Mr. Williams, "that you have not been at the mine for the week. Is that true?" "Yes, Sir," said Capt. — "It is. I thought that as Mr. Williams is so kind as to give us agents 12s. per month to spend he would also be kind enough to give us time to spend it!" Mr. W. smiled and forgave him, but such conduct would not be excused now. The tipping agents of the present day are, compara-

tively, very few. I advocate an allowance to agents of (say) 17. 1s. per month each, in addition to anything left from the account-day dinners. That guinea would suffice for the pay-day dinners, and for an occasional drop at other times when a friend gives a call. I think that many resident agents who devote all their time to one mine are insufficiently paid for their services, the low price of tin notwithstanding.—Truro, Feb. 27.

R. SYMONS.

MINING IN IRELAND.

SIR.—It is possible that Mr. Thomas Tonkin may be in error when he states that Dhurode Mine produced "thousands of tons of copper ore." I think the total quantity sold in Swansea was 250 or 300 tons, but this fact can be easily ascertained, as no ore from that mine was sold elsewhere. The extent of Dhurode sett is close upon 200 acres. There is an English gentleman residing here who knows as much, and I think a little bit more, about Dhurode Mine and its value as Mr. Tonkin. Crookhaven engine-shaft is not sunk on the course of the lode, it is 70 fms. deep perpendicular, and sunk in the country. Cross-cuts were driven south from the shaft, but the main lode was never intersected, as it changed its underlie from north to south.

Glandore, Feb. 26.

VERITAS.

[For remainder of Original Correspondence, see to-day's Journal.]

Meetings of Public Companies.

PLACERVILLE GOLD QUARTZ COMPANY.

The first ordinary general meeting of shareholders was held at the company's offices, Great Winchester-street Buildings, on Tuesday, Mr. REGINALD BIRD in the chair.

Mr. P. A. EAGLE (the secretary) read the notice convening the meeting.

The CHAIRMAN said that this being the statutory meeting he had really very little to say, but as both Mr. Courtenay and Mr. Bowe were well acquainted with the mine he would ask them to give the details of its position and prospects.

Mr. COURTENAY gave the results of his enquiries as to the value and prospects of the property. The mine he said had not been worked for years owing to a cave, but it bears an excellent reputation in the locality, and surprise had been expressed that as the property had produced so much gold it should have been so long left unworked. He might say that the property was purchased on the recommendation of Prof. Price, of San Francisco, and he could not, therefore, do better than give a summary of his report, in which he said that the mine was on the main gold belt of California, in a district rich in placer and quartz mines, the vein being large, well defined, from 3 to 15 ft. wide, and having the gold uniformly diffused through the quartz. The property can be very economically worked, because it is situated actually in the town of Placerville, so that supplies of any kind could be readily obtained, and there will be no necessity whatever to incur costs for land carriage. The hoisting works can easily be run by water which will be furnished by a local water company—the El Dorado—and the ground will not be expensive for timbering nor for pumping, as it makes but little water. Altogether the expenses of milling and mining will be light, and labour is cheaper than in most places in California. The mine was carried on from 1851 to 1865 by working miners, but in a small way only, yet it has produced gold to the value of \$1,000,000, a good proportion of which was paid to the shareholders as dividends. The ore produced during the period averaged \$12 to \$30 per ton of 2000 lbs., and it is naturally said that if the mine paid so well when labour was high and quartz mining not so well understood, it must prove remunerative at the present time. At present the milling of the ore would not cost more than \$4 per ton, and the crushing and amalgamating \$1.50 per ton. There was considerable machinery on the mine itself, including a 10-stamp mill; much ground had been explored, and certain drift connections alone were necessary, in addition to the explorations which had already been made, so that the re-opening could be made and tested with very little money. The plan suggested by Prof. Price will be to unwater the shaft and test the quartz now exposed in the shaft and drifts leading from it, and then to connect the shaft with the old workings, and get at the available quartz in them. After this work has been done, we hope, having so many essential points in our favour, to put the mine in a paying condition at an early date.

Mr. BOWE said: Having been a resident of Placerville at the time this mine was being worked by the original proprietors, some 20 years since, I had occasion, as an officer connected with the collection of the State revenue, to go into the underground works for the purpose of assessing the men engaged in stopping out the ore. The work progressing at that time, if I remember rightly, was not to exceed 80 to 100 ft. deep, and although I did not go down into the mine for the purpose of examining the ledge, I can remember that I was struck with the great width of the chamber from which the quartz was being taken. According to my best recollection, the pay ore at the point then being worked must have been from 10 to 15 ft. wide, and was reputed to yield from \$15 to \$30 per ton. I think this must have been the fact, considering the large amount realised from the very limited area worked out by that company. This space is now termed the "old workings," and only consisted of an excavation about 150 ft. long on the lineal course of the vein, extending to the depth of 200 ft. From this comparatively limited space I have the best reasons for stating that they took out over \$1,000,000. I was personally acquainted with many of the shareholders, and know the mine to have paid exceedingly well, notwithstanding the exceptionally great expense of conducting this kind of mining at that early day. In consequence of the then inexperience in quartz mining the ore was stoped out with but little regard to timbering or bracing of the walls. The consequence was the whole works caved in, thereby preventing further work at this point, and necessitating the sinking of a perpendicular working shaft (involving considerable expense) in order that they might be able to strike and open up the lode below the old workings. The old company fearing after the mine had caved that it could not be opened without great expense, sold it out to new parties, and for the facts relating to the explorations made by the new proprietors I am indebted to Mr. D. C. Wickham, of Placerville, who superintended the works. I have known Mr. Wickham for a long time, and believe his statements to be thoroughly trustworthy. The new perpendicular working shaft was started down about 130 ft. east of the croppings, directly opposite to the old works, and at a depth of 300 ft. the ledge was cut, the sinking being continued 20 feet deeper for the purpose of a sump, making the total depth from surface 320 ft. At the point where the shaft intersected the lode, which is 20 ft. above the bottom, a level was driven north on the course of the vein 95 ft., and south about 25 ft.; 40 ft. from the shaft in the north level a winze 25 ft. long and 20 ft. deep was sunk on the vein, and the ore from this winze, as also from a space of 30 ft. above this level, has been stoped out, proving the ledge at the various points which have been explored to be from 4 to 6 ft. wide. The ore thus taken out, although now known by actual mill test to contain from \$8 to \$18 per ton, this new company in their manner of treating the portion which they worked succeeded in saving only a small proportion of the gold actually contained in the ore. This result, coupled with the exhaustion of their capital, discouraged them to such an extent that the mine was closed down, and about the only work done since was the treating of the ore left on the dumps, which gave the result above stated. Shortly before our purchase of the mine the working shaft was examined, and found to be in quite good condition, with but a small amount of water in the bottom. The old tunnel through which the original proprietors brought to surface the most of the ore taken from the old workings has been cleared out up to the caved portion. This tunnel can now at small expense be extended through the caved portion of ground by timbering it, thereby enabling us to reach unbroken ore on a level with the old workings, which is known to have paid exceedingly well, or this new ground in the old works may be reached by a short cross-cut from the new working shaft. Considering the various points at which ore is known to have been exposed in both the old and new works, it would appear that at a

reasonable cost and in a comparatively short time we shall be enabled to raise ore in paying quantities, and with the milling facilities already at hand we have, I think, the best reason to expect early and very satisfactory results.

The CHAIRMAN considered that Messrs. Courtenay and Bowe were entitled to their thanks for the information they had given, and could say from his own experience that \$8 ore would give them a good return.

Mr. COURTENAY would observe that the property had not been purchased on an estimate of \$18 per ton for the ore, and that they would be quite satisfied if it went up to \$12.

The CHAIRMAN said that they had elected Mr. Courtenay on the board, and he had now to move that the election be confirmed. Mr. DUNCAN seconded the motion, and it was unanimously agreed to, the usual vote of thanks to the Chairman terminating the proceedings.

SOUTH WALES COLLIERY COMPANY.

The fifteenth ordinary meeting of shareholders was held at the Cannon-street Hotel, on Wednesday, Mr. WILLIAM HENRY CHALLIS in the chair.

The directors in their report stated that the accounts still exhibited a loss of 1960s. 3s. 7d., exclusive of the cost of necessary connections in the Rose Heyworth Pit, and driving through the fault in the house coal level, together amounting to 1195s. 8s. 9d. A considerable portion of the loss had arisen through the wages of the day men having been higher than those prevailing at neighbouring collieries, brought about by alterations made by Col. Heyworth, as stated at the last meeting. The directors had the satisfaction of congratulating the shareholders that the workmen had now submitted to a scale of wages in accordance with those existing in the immediate neighbourhood, and the directors trusted this would enable them to show at the end of the current half-year a different state of things, so far as the cost of production is concerned. The collieries were in a highly efficient condition, and the quantity of unworked coal practically inexhaustible during the currency of the leases. At this moment the collieries were in a position to supply half a million tons of coal annually. During the half-year they had raised 75,534 tons, as compared with 99,381 tons in the corresponding half-year of 1876, the average selling price being 6s. 8-88d. in 1876, as compared with 5s. 9-84d. in 1877. In the half-year to June 1878, the selling price was 6s. 7-63d., as compared with 5s. 9-94d. in the half-year ending June, 1877.

The CHAIRMAN, in moving the adoption of the report and accounts, referred to the circulars which had been circulated on the affairs of the company, and then stated that in 1854 the output of the United Kingdom collieries was 60,000,000 tons, while in 1876 the amount had risen to 130,000,000 tons, thus doubling the output in 22 years. The collapse in the iron trade had had the effect of throwing a large amount of coal on the market, thus causing a reduction in prices. The cost of raising was in 1872 about 30s. per day, and in 1877, 70s. per day. This was caused principally by the fact that the length of their roads had increased from rather over 6 miles to rather more than 13 miles, being about the same proportion as the cost, or 30s. to 70s. Thus the wages had risen from 2s. 4d. to 3s. in 1872 to 3s. 4d. to 3s. 8-5d. per day in 1877. The directors had now succeeded in getting the men, after a short strike, to accept the terms offered by the directors, which were the same as those paid in the neighbourhood. The great increase in the cost had been in the drivings and headings, with a view to a large output from the Rose Heyworth Pit, which ought not to have been charged, as it had been, to Cwmillery, and the accounts of the last half year were not so charged. The works in this respect would be completed in a few months, and these charges would disappear from the accounts. The late management seemed to have worked the least profitable portion of the colliery, and neglected that which would have paid better. The Chairman then further referred to the report, &c., under the late and present management, for the purpose of vindicating the present direction, and having referred to the question of locked lamps, said he there was a good future before the company. There would be an increased output, and there would be a saving of 2000s. on the wages of the day men, and 5 per cent. upon the colliers' wages; and fresh arrangements had been made for the more energetic sale of their coal. In conclusion, the Chairman moved the adoption of the report and accounts.—Mr. JOHN LAWRENCE (a director) seconded the motion.

Lieut.-Col. HEYWORTH (late chairman of the company) moved, as an amendment, that the meeting considered the report and accounts unsatisfactory, especially deprecating the expenditure of working the colliery, &c., being placed to capital instead of revenue account, whereby the accounts of the last half-year's working were made to appear less disastrous than they really were. Col. Heyworth, in moving this amendment, supported it at some length, and stated the various items which had been charged to capital, which should have gone to revenue, especially on cottages, which in the last report of the directors were said to be finished. As to his having raised the wages of the day men, at that time the men were earning about 10s. per day for the company; the question was discussed in Newport, and he was instructed to arrange the matter the best way he could. The men proved that in the Aberdare district—the best district for us, as the head of the trade—the men were receiving the 6s. per day increase that they asked of this company, and the directors—himself amongst them—had been obliged to accede to it. The present directors had since May last been paying to some of the men 30 per cent. more than they should have done, probably through their own ignorance, for the Aberdare men had since April last accepted a reduction of 40 per cent., and their (the South Wales Company's) men had only been subjected to a reduction of 15 per cent. He then protested against Mr. William Graham retaining his seat after infringing the Articles of Association by accepting commissions for the company.—Mr. A. W. RAY seconded the amendment, which was supported by Mr. Potter, Mr. Fowler, and other shareholders.

After a long discussion, in which several shareholders took part, the CHAIRMAN replied to the several points raised, defending the policy of the present management, especially with regard to the charging of the works done at the Rose Heyworth Pit, which were charged to capital, while others thought it would more properly have been charged to revenue.

The amendment was ultimately put to the meeting, and lost on the show of hands by 20 for, and 11 against. The motion was then put and carried. The Chairman said that he had 874 proxies in favour of the board, and 409 against them.

The retiring directors, Messrs. W. B. Greenfield and H. J. Kennard were re-elected, and the auditors, Messrs. Deloitte, Dever, Griffiths, and Co., were re-appointed.

The meeting, after lasting three hours and a-half, closed with a vote of thanks to the Chairman and directors.

WEST GODOLPHIN MINING COMPANY.

The general meeting of shareholders was held, on Tuesday, at the offices of the company, Great St. Helens.

Mr. ROBERT WILSON in the chair. Mr. CHARLES THOMAS (the secretary) read the notice calling the meeting, and also the report of Mr. Pope, the mining captain, which was as follows:—

Feb. 23.—I beg to hand you statement of work done in the past four months, and distance driven and sunk in the different levels and shafts to the present date, with the value of the lode in the different pitches.—Caunter Lode: Wilson's engine shaft has been sunk below the 70 fm. level 5 fms. 1 ft. The 70 has been driven north of Wilson's engine-shaft 13 fms. 5 ft., and driven west of the caunter on Wilson's lode 1 fm. 5 ft. 3 in. The 70 has been driven south of Wilson's engine-shaft 6 fms. 3 ft. The 60 has been driven north 5 fms. 1 ft. 6 in.—Wilson's Lode: Boulton's shaft has been squared down to the bottom of the 60, and the level driven east of the shaft 3 ft. The 60 has been driven west 7 fms. 5 ft.—Pink Lode: The 40 has been driven west 4 ft. 6 in. The 50 has been driven west 6 fms. 0 ft. 1 in.—Wilson's Lode: The deep adit level has been driven west 6 fms. 1 ft. The deep adit level has been driven east 3 fms.—Caunter Lode: In Wilson's engine-shaft, sinking below the 70, the pit sinking in is 9 in. wide, producing rich stones of tin; sunk 8 fms. 2 ft. 6 in. In the 70 driving south the lode is 9 in. wide, worth 2s. per fm.; driven 7 fms. 3 ft.—Wilson's Lode: In the 70 driving west we are carrying a width of 6 ft. in the lode; worth for this width 20s. per fathom. I shall have some of the slides taken down as soon as there is sufficient room for doing so; driven 4 fms. We have also commenced to drive east at this level, carrying a width of 5 ft., worth 10s. per fathom; driven 1 fm. 1 ft.—Pink Lode: In the 60 driving west the lode is small; driven 1 fm. 3 ft.—Wilson's Lode: In the 60 driving west the lode is 3 1/2 ft. wide, worth 5s. per fathom; driven 6 fms. 3 ft. No. 1 stop in the bottom of this level west is 9 ft. wide, worth 20s. per fathom. No. 2 stop in the bottom of this level is 5 ft. wide, worth 15s. per fathom. No. 3 stop in the bottom of this level west is 10 ft. wide, worth 20s. per fathom. No. 1 stop in the back of this level west is 6 ft. wide, worth 12s. per fm. No. 2 stop in the back of this level west is 3 ft. wide, worth 5s. per fathom. No. 1 stop in the bottom of this level east is 14 ft. wide, worth 25s. per fathom.—Caunter Lode: In the 60 the lode is small; driven 15 fms. 4 ft.—Wilson's Lode: In the 50 driving west the lode is 2 ft. wide, worth 2s. per fathom; driven 57 fms. No. 1 stop in the bottom of this level west is 5 ft. wide, worth 10s. per fathom. No. 2 stop in the bottom of this level is 7 ft. wide, worth 8s. per fathom. No. 3 stop in the bottom of this level is 7 ft. wide, worth 8s. per fathom.—Pink Lode: In the 50 driving west the lode is 15 in. wide, worth 4s. per fathom; driven 23 fms. 1 ft. We have employed on the mine 149 men 31 boys 22 girls.

Although our returns for the past four months have not been so good as I expected they would have been when I gave my opinion on the estimate of the returns for the four months, a day or two previous to our last general meeting, I am pleased to say there is one thing in connection with the mine now that I can state with confidence. Since our last meeting we have cut Wilson's lode at the 70 fm. level, and so far as opened on it is richer than it was at the 60 fm. level, and the lode in the stops in the bottom of the 60 shows no sign of falling off. I am also thinking we shall cut it at the 80 in about eight months. We sold on Thursday 10 tons 0 cwt. 2 qrs. 22 lbs. of tin at 36s. per ton, and calculate to sell about the same quantity on Monday next. We have about 90s. worth of copper ore dressed ready for the market, and about 90s. worth more at surface to dress.—JOHN POPE.

The CHAIRMAN said that since the last meeting they had completed all the works connected with the new engine at an expenditure of 530s. The result of the four months' working, he was sorry to say, showed a loss of about 1323s. in round numbers. In the first month embraced in the accounts there was a loss of 574s., owing to the stoppage of the works for a fortnight or three weeks during the time they were changing the pitwork. In the second month there was a loss of 236s., in the third of 338s. 10s., and in the fourth month of 184s. 10s. Another month not embraced in the accounts, and of which the cost-sheet was before them in committee, showed, taking into account the tin sales and the cost, there was a

loss of 27l. 10s., to meet which they had about 90l. worth of copper ore dressed within the last six weeks, so that they might say that the last month showed a small profit; and looking to the improved nature of the mine in the 70 fm. level, there was every likelihood of meeting the cost, and leaving a small profit each month. Under these circumstances, although there was a debit balance on the accounts of 884l., the committee did not propose to make a call, in the hope that the profits would be sufficient to pay off the balance against the mine in the next few months. The price of tin was the lowest they had ever received—30l. per ton; and they could easily see what their prospects would be if they could obtain anything like the prices of two or three years back, (say) 45l. or 50l. per ton. They would see by the captain's report that they were down at another level, and if that increased in value at the same ratio as the previous levels they would be able at the present price of tin to make a good profit. The losses shown in the months he had just referred to included 580l. for machinery. The total amount expended in new machinery was 3038l., which included the cost of putting the machinery into its place, that cost being greater than the price of the machinery.

A SHAREHOLDER said a rise of 5l. per ton would give them a fair dividend.

The CHAIRMAN (continuing): They had worked the mine as economically as possible; the committees' fees being very light, only 11l. 11s. for the four months. He then moved the adoption of the report and accounts, which was duly seconded, and carried unanimously.—The retiring committee were unanimously re-elected.

The CHAIRMAN, in reply to a remark, said, considering the depressed state of the metal trade, they might congratulate themselves that they were even better off than some of their old mining neighbours. And although their mine was only selling for about 10,000l., they were in a more satisfactory position than some which were selling for 50,000l., and which were making a loss of 200l. or 300l. per month.

The usual vote of thanks to the Chairman and committee closed the proceedings.

EAST POOL MINING COMPANY.

At a meeting of adventurers, held at the mine on Monday (Mr. R. R. BROAD in the chair), the accounts for 12 weeks' working showed a profit of 727l. 2s. 10d. It was proposed, on the motion of the Chairman, and seconded by Mr. Rule, that the accounts be allowed and passed, and that a dividend of 640l. (2s. per share) be declared. The balance of 727l. 2s. 10d. was directed to be appropriated as follows:—640l. for the dividend, thereby reducing the debit balance to 2229l. 17s. 2d., which was carried to the next account. The following report was presented:—

Feb. 18.—Great Lode: The engine-shaft is down 14 fms. below the 180; we are now cutting a plat. The 190 is driven east from sump-wine about 17 fms., and is worth for tin 18l. per fathom. The 190 is driven west from sump-wine 5 fms., and is worth for tin 20l. per fathom; we are now cutting a plat at this level. In the 180 we have six stopes working—two east in the back and two in the bottom, worth on an average for tin 18l. per fathom each stope; and two west worth on an average for tin 12l. per fathom each stope. At the 170, east of engine-shaft, we have driven south about 16 fms. The stope in bottom of the 160, on the eastern ground, is worth for tin 10l. per fathom.

Engine Lode: The 170 driving west has intersected the cross-course; we are now cutting through it.

Flat Lode: The wine in bottom of the 140 is communicated with the stopes in the 155; at this point we have three stopes working, worth on an average for tin 12l. per fathom; the lode here is about 5 fms. wide, and is worth on an average 12l. per cubic fathom. At the 150 we have commenced to drive east on the south part of the flat lode; this end is worth for tin 15l. per fathom.

South Lode: The 160 is driven east of the cross-cut 43 fms., and is worth for tin 12l. per fathom. The 150 is driven west from the eastern cross-course 43 fms., and is worth for tin and copper 10l. per fathom; this end is now under the 150 coming east from the western point, the distance being about 3½ fms.; we shall at once commence to rise in the back of this level. The 150 is driven east from the western cross-cut 44 fms., and is worth for tin and copper 13l. per fathom; we shall sink in the bottom of this level to communicate with the above-mentioned rise. The wine sinking in bottom of the 140, west of eastern cross-course, is down 5 fms., and is worth for tin and copper 10l. per fathom. The wine sinking in bottom of the 130 is down 10 fms., and is worth for tin and copper 10l. per fm. We have been clearing attle from the old workings to make ready for cutting down the western shaft. We have eight tribute pits working at tributes differing from 10s. to 13s. 4d. in l.—JOHN MAYNARD, Manager; CHARLES BISHOP, WM. TIPPETT, Agents.

The CHAIRMAN said it was a great source of regret to all of them that since the last account tin had declined in price 4l. to 5l. If the feelings of the committee and the large shareholders in Liverpool were consulted, the whole profit would be carried over to the next account; but, inasmuch as many of the adventurers expected a dividend, and the mine was rich, and their debit balance was only 2200l., he thought they could go on making dividends.

Mr. G. A. MICHELL said, as there had been a good many remarks made as to the lowness of the wages given in that and other mines, he had thought it advisable to take out of the book the wages paid for the last four months, and he found that the workers had averaged 3l. 7s. per man monthly, and the tributers from 3l. 1s. 7d. to 3l. 4s. 7d. He believed that for these wages the men were doing more work than they did formerly, but they were not at all bad gettings.

Mr. RULE moved a vote of thanks to the Chairman and to the committee, and the CHAIRMAN, in replying, said the committee had done all they could to benefit the mine, and he referred to the new calciner, and hoped by the next account they would be able to report good results. They were indebted to their worthy purser for its introduction.

Mr. MARTIN (the purser) also returned thanks as a member of the committee, and said that, owing to the low price of tin, they were obliged to work with the greatest possible economy, both underground and at surface. They had turned their particular attention to economy in the dressing of tin, and he hoped that in three or six months they would be able to show satisfactory results.

On the motion of Mr. RULE a vote of thanks was passed to the agents; and Capt. Maynard, in responding, said the mine never looked better for producing ore than at present.

Capt. Bishop also returned thanks, and said the mine would be in its ruddy youth when they were all in their graves.

Mr. RULE moved a vote of thanks to Capt. Hosken for the interest which he still took in the mine, and for the service he did to mines in the neighbourhood, as the representative of Mr. Basset.

Capt. Hosken, in responding, said it was a matter of great pleasure to him that when he left that mine as an agent he was not obliged to part with his interest in it, because he had then a great opinion of the mine, and that opinion was now greater than ever it was. He had inspected the mine about three weeks since, and he was quite proud to see such evidence of richness. Most of Mr. Basset's mines were looking remarkably well, and capable of yielding large quantities of mineral, and all that was wanted was a better price for tin. He believed the deeper East Pool became the richer it would be, especially in the eastern part, and he was pleased to see a great improvement in the western end, and he augured a great future for the mine.

WEST TOLGUS.—At the four-monthly meeting of the adventurers on Tuesday, Mr. Richard Taylor in the chair, the accounts showed a profit on the two months' working of 782l. A dividend was declared of 1l. 10s. per share, leaving a credit balance of 1456l. to be carried to next account. The agents presented a very satisfactory report, some of the lodes in the winzes yielding from 9 to 12 tons of ore per fm. After deducting lodes' dues the next accounts would show a realisation of 4303l., which was 705l. more than the amount credited that day. The cost, however, would be considerably increased by the purchase of a new boiler and other portions of the plant for the boring machines, which it had been decided to employ in sinking Taylor's engine-shaft. The Chairman said it had been agreed that he should make enquiries with respect to the boring machine, and he found that in his firm's other works the Darlington and Barrow boring machines had done good work. There were several difficulties in the way of the Ingersoll, so that they abandoned that machine at once. Mr. Darlington had told him that he was very busy elsewhere, and he would rather not undertake to drive in West Tolgus. He (the speaker) had, therefore, seen Mr. Loam on the matter of the Barrow drill, and, with the agents, he had agreed to give Mr. Loam an order for five drills, three of which would be kept in constant operation, and the other would be kept in reserve. The estimated cost would be about 1200l. One of the great difficulties Mr. Darlington found in the way was as to getting the stuff away as soon as it was broken, but Capt. Hosken, who came to the mine with Mr. Loam, recommended the use of a small machine for rapidly drawing the stuff up.

TINCROFT.—At Tincroft meeting a loss was shown on the three months' working of 233l., the costs being 7228l., and the credits 6994l. It was resolved to put a skip-road in the shaft, which would enable them greatly to increase the returns. This would stop the shaft for a month, but that could soon be made up.

CARN BREA.—A quarterly meeting of adventurers was held at the mine on Thursday—Capt. Teague in the chair. The accounts showed a profit on the three months' working of 104l. This result was announced amid applause. The Chairman stated that the difference in the price of tin this quarter compared with last was 2l. 19s. 6d. per ton, and on the amount of tin sold it made a difference to the mine of 915l. The report, which was very satisfactory, stated that arrangements were made for sinking the Highbury west shaft under the 220, and 12 fathoms had been sent to the Diamond Rock-Boring Company. In accordance with instructions received at the last meeting, Capt. Teague had made a contract with the Diamond Rock-Boring Company. Two levels were to be provided, and they are to be paid for at the rate of 32l. per fathom, and the shaft at 50l.; the duration of the contract to be till Dec. 31, 1878. These terms the Chairman thought were very high, but he could not well help himself. In the ledger balance there was shown to be due to merchants 5333l.; doctors, 313l.; Mr. Basset, 247l.; bankers, 2584l.; bills payable, 2977l.; making the adventurers' balance, after crediting items on the other side, 26,981l. The Chairman explained that 2000l. had been paid for labour on Saturday last, which did not appear on the books, but would do so at the next meeting.—West Briton.

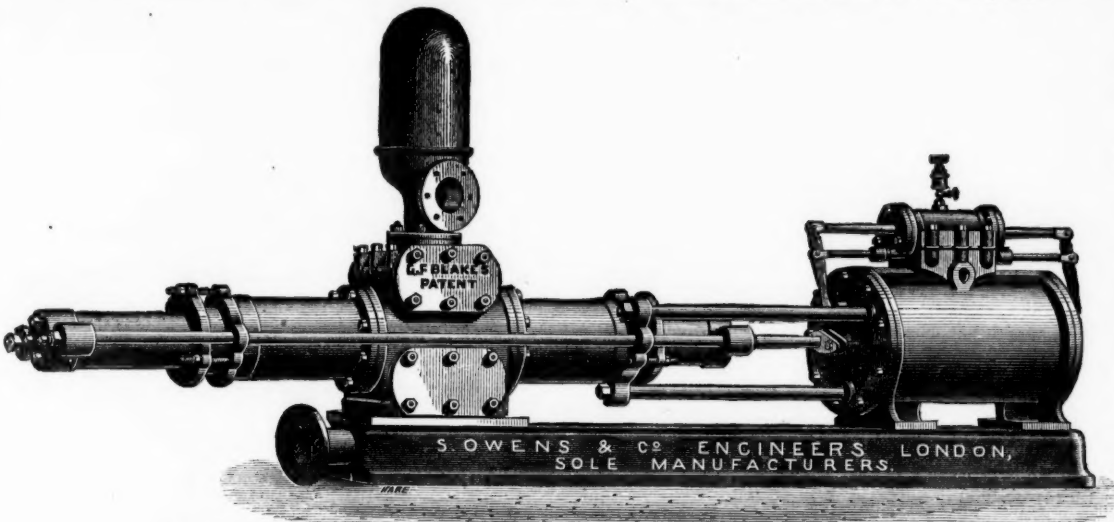
BLAKE'S PATENT STEAM PUMP.

MORE THAN 10,000 IN USE.

SOLE MAKERS FOR GREAT BRITAIN,

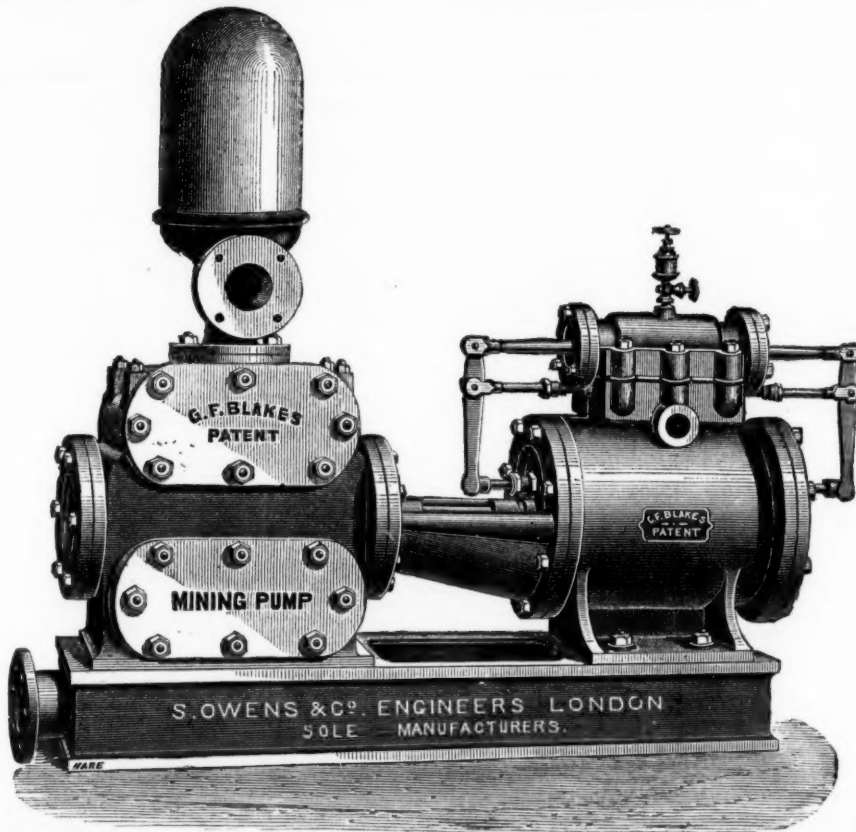
S. OWENS & CO.,
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Agent in Scotland: W. Hume, 195, Buchanan-street, Glasgow.

These PUMPS from their SIMPLICITY, RELIABILITY, DURABILITY, and ECONOMY are SPECIALLY SUITED FOR MINING PURPOSES, where large quantities of water require to be raised from great or medium depths with CERTAINTY. They are double-action in their construction, throwing a constant stream of water, can be made of any stroke to suit the space in which they have to work, can be arranged with any combination of steam and water cylinders to suit the pressure and lift against which it is desired to work them, are made of the very best materials and highest class of workmanship, and all working parts can be readily got at by any ordinary workman, and replaced if necessary by a duplicate part (all such being interchangeable) in the shortest possible time. For situations where gritty and sandy water has to be pumped the DOUBLE-PLUNGER PATTERN is recommended. Where space is limited the PISTON PUMP is better suited, a novel feature of which is the PATENT REMOVEABLE LINING, which can be removed in a few minutes and substituted with a new one, without disturbing any other part of the pump.



Blake's Improved Double-plunger Steam Pump.
S. OWENS AND CO.,

In placing 'the' BLAKE STEAM PUMP before the mining world, believe they are offering the BEST, MOST RELIABLE, and ECONOMICAL PUMP that has yet been made, and solicit an inspection of various sizes in operation at their works, Whitefriars-street, Fleet-street, London.



Blake's Improved Mining Pump, with Patent Removeable Lining to Pump Cylinder,

Any combination of these Pumps may be had to suit circumstances. The following are some of the SIZES SUITABLE FOR MINING PURPOSES:—

	12	12	12	12	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	24	24
Dia. of steam cylinders.. In.	12	12	12	12	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	24	24
Dia. of water cylinders.. In.	3	4	5	6	4	5	6	4	5	6	8	4	5	6	8	5	7	8	9	6	8
Length of stroke... In.	18	18	18	24	24	24	24	24	24	24	24	24	30	30	30	30	30	36	36	36	42
No. of strokes per minute..	30	30	30	25	25	25	22	22	22	22	22	22	22	22	22	20	20	17	17	17	15
Quantity in gallons per hour, approximately ...	1440	2610	4200	5940	2940	4620	6600	2646	4158	5940	10620	2646	5160	7500	13260	4586	9000	12360	15660	6720	1200

PRICES FOR THE ABOVE, OR ANY SPECIAL SIZE, AND ILLUSTRATED CATALOGUES FURNISHED ON APPLICATION.

PATENT CONDENSERS

Can be supplied for any size pump to effect a saving of fully 30 per cent. in the consumption of fuel, greatly increasing their efficiency

The Blake Pump will work under water, and as efficiently with compressed air as with steam.

BLAKE'S DONKEY PUMPS FOR FEEDING BOILERS KEPT IN STOCK.

FOREIGN MINING AND METALLURGY.

Prices are so low in the Belgian coal trade that sugar manufacturers have been tempted to make endeavours to conclude contracts for the ensuing season. It appears tolerably certain that they could not find a better occasion for doing so. Deliveries and sales for the time being exhibit feebleness; the metallurgical interest only lays in supplies to meet its immediate requirements, although there is some tendency towards a more sustained current of orders. The question of the employment of women and children in Belgian coal mines has been discussed in the Belgian Chamber of Deputies, without apparently, however, much practical result. With regard to the employment of women in Belgian collieries, it may be observed that it only prevails to a small extent, as when women marry their husbands generally stipulate that they shall remain at home.

The winter season has now terminated in the French coal trade, and with much the same state of things prevailing as that existing in September last year. If there is any difference between March, 1878, and September, 1877, it is that French coalowners find that English, Belgian, and German competition is continually increasing; Belgian coal is especially finding favour just now in the Ardennes. With regard to the German coal trade it may be observed that the Mining Association of the Dortmund district has just opened for competitive discussion the question of the present state of the manufacture of briquettes, with especial reference to the circumstances and conditions prevailing in Westphalia. In consequence of the large production of the Westphalian coal field (more than 10,500,000 tons in 1876), and in consequence also of the fact that the production is scattered over a considerable number of points, very extensive quantities of small coal have to be dealt with, and hence the importance and urgency of the briquette question to Belgian coalowners.

In the French iron trade the situation remains very nearly the same. In the Haute-Marne orders are of little importance, buyers contenting themselves with merely laying in assortments. Rolled iron, from coke-made pig, has brought 6l. 12s. to 6l. 16s. per ton, while special irons, first category, have made 7l. 4s. to 7l. 8s. per ton. In the Nord some transactions are being proceeded with upon Parisian account upon the basis of a price of 6l. 4s. per ton at the forges. Special iron for building purposes is in less request now than it was at this period last year; first class is quoted at 6s. 8d. per ton at the works. At Paris the proprietors of some warehouses are laying in supplies, being shrewdly resolved to profit from the low rates now prevailing. In the warehouses merchants' iron is dealt in at 7l. 4s. to 7l. 8s. per ton. The Imperial Senate of Finland has made a reduction in the duties imposed on certain descriptions of iron entering that country. A German writer observes that German steel rails cannot now be profitably imported into France, in consequence of the heavy import duties imposed upon iron and steel entering the French Republic.

Contracts for new rolling stock—principally passenger carriages—have been let this week at Brussels for the Belgian State Railways. The prices at which these contracts were let were about the same as those prevailing at the last previous adjudication. It appears that the contract for iron rails obtained in Belgium for an Italian railway was not let at quite such low rates as had been supposed; the price obtained is 5l. 18s. per ton. The Thy-le-Château Works have also obtained an order for 3500 tons of iron rails for Italy at 5l. 12s. per ton, delivered at Antwerp. The first contract, just alluded to, is for 14,000 tons. The question of entirely iron permanent way on railways continues to excite some attention in Belgium. The Great Central Belgian Railway Company has just decided upon introducing Serres and Battig iron permanent way upon its system; permanent way on the Serres and Battig system has given much satisfaction in Austria. The John Cockerill Company has just completed at Antwerp the establishment of a crane of 120 tons power and 120 ft. in height; this crane is intended to be used in the loading of steam-boilers, pieces of artillery, &c. The crane is wholly of iron. The John Cockerill Company is turning out large quantities of steel rails; on one day (Feb. 6) it produced 365 tons. MM. Bellefroid and Leveque have obtained a contract for a large gas meter at Spa. The Meuse Workshops Company, at Liège, is about to supply the St. Laurent Salt Mines, in the Meurthe-et-Moselle, with a large quantity of salt.

A Russian paper announces the discovery of several large coal fields in Turkestan. The greatest thickness and extent of stone-coal has been found in the valley of the River Ili, near Kuldsaka. In this valley the coal crops out. From the river Dshergalana the formation ceases, but reappears at a distance of 80 versts, and runs for 10 versts along the valley of the River Kasch. Altogether eight beds have been found.

A correspondent of a Westphalian paper, writing from Witten, refers to the resolution passed a short time ago to reduce the output of coal from the Westphalian pits to the extent of 10 per cent. on the 1st of the current month, and observes that, as this reduction is calculated on the November output, the measure must entirely fail to attain the end in view. The output in November was unusually large, and in consequence the production during February, March, and April, the three months during which the convention is to remain in force, will be 3,000,000 metrical cwt. more than the monthly average for the past year, and 5,500,000 metrical cwt. higher than the output during the corresponding three months last year. This excess must make itself felt, as the consumption always continually declines during the current and two following months, the period in question.

BRASS TORPEDO BOATS.—As it has been found that the steel hulls of the small torpedo launches deteriorate quicker than iron under the influence of the water, an order has been given to Messrs. Maudslay, Sons, and Field for the construction of a torpedo boat to be made entirely of brass.

HOLLOWAY'S OINTMENT AND PILLS.—Much watchfulness must be exercised as winter advances, and the earliest evidences of ill health must be immediately checked and removed, or a slight illness may result in a serious malady. Relaxed and sore throat, diphtheria, quinsy, throat cough, bronchitis, and most other pulmonary affections will be relieved by rubbing this cooling ointment into the skin as near as practicable to the seat of mischief. This treatment, so simple and effective, is admirably adapted for the removal of these diseases during infancy and youth. Old asthmatic invalids will derive marvellous relief from the use of Holloway's remedies, which have brought round many such sufferers, and re-established health after every other means had signally failed.

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GUARANTEED NO INFRINGEMENT OF ANY PATENT.

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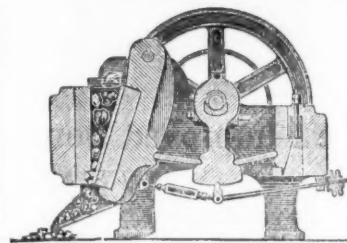
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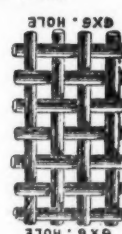
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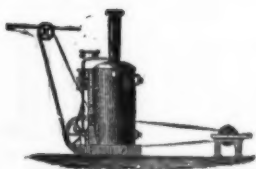
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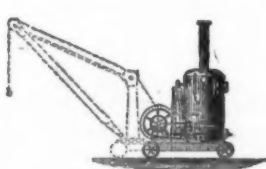
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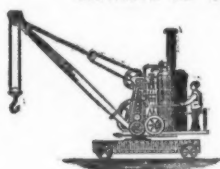
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No building required.



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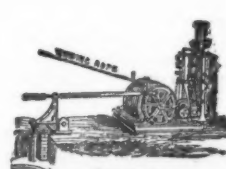
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For Steep Inclines and Quick Curves.



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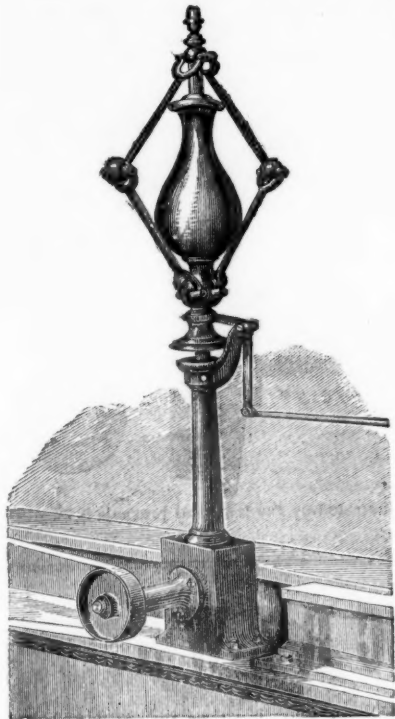
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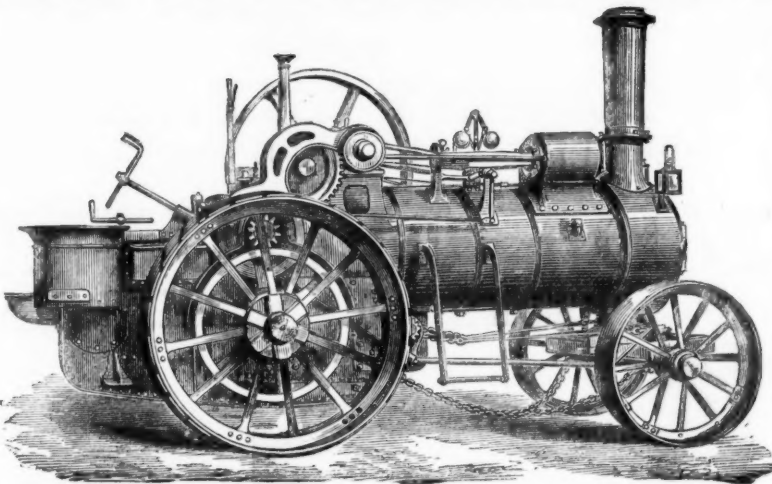
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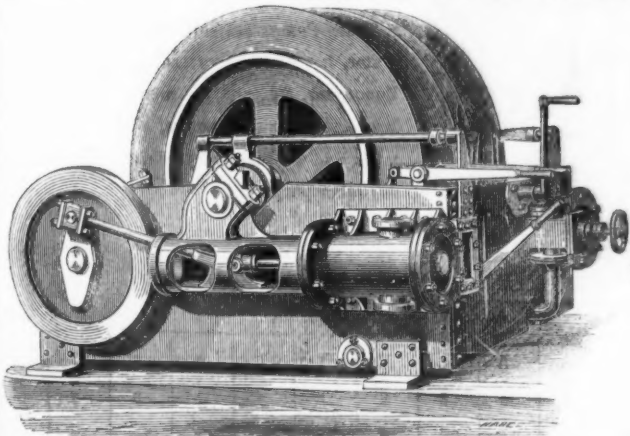
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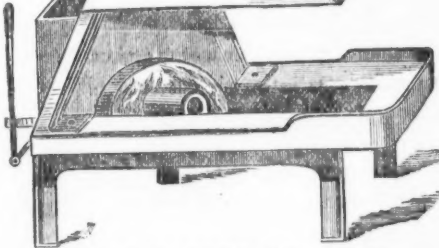
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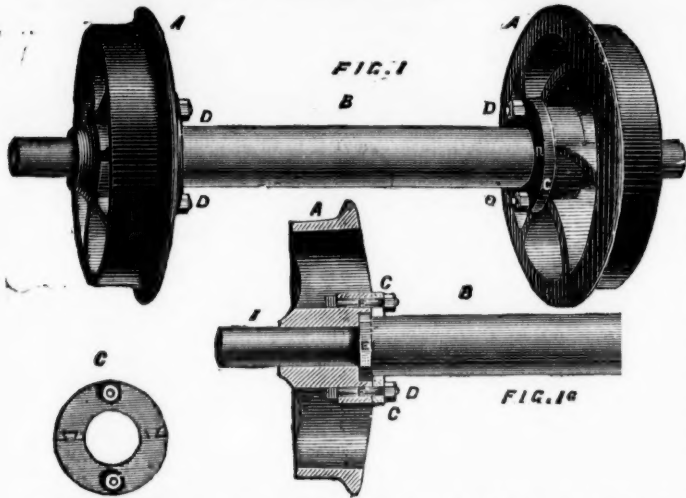
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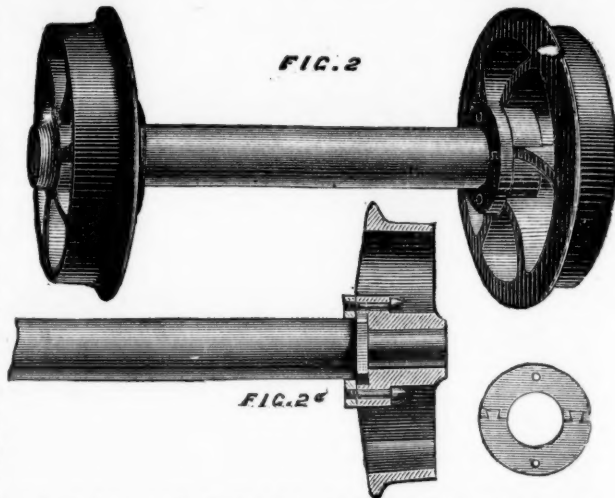
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Patent Method of Fitting up Cast Steel Wheels and Axles.



Figs. 1 and 1a show a longitudinal view and plan of a pair of corf wheels and axles fitted up for outside bearings. A A, are the wheels; B, is the axle; C C, the washers; D D, the bolts; E, the collar on axle B; and F, the recessed boss in the wheel.

The wheel is cast with a recessed boss in the inside, made to any shape, corresponding in shape and depth with a collar formed on the axle. Figs. 2 and 2a show a longitudinal view and plan of a pair of corf wheels fitted up for inside bearings. The washers are secured to the boss of the wheel in outside bearings by bolts and nuts, and in inside bearings by set screws.

The advantages of the above system are:—A, the singular simplicity of fitting—enabling any inexperienced person, with the aid of a spanner or screw-driver, to detach the wheels from the axle or fit them together in a very short time. B, perfect solidity, the wheels and axles becoming as one piece. C, durability, no need of putting the wheels or axles into the fire, under any circumstances, which is so detrimental to wheels, rendering them remarkably brittle, and which under other systems are detached from the axle by the aid of fire. D, economy in fuel and wages, saving hundreds of pounds yearly to large coal owners. The



important desiderata secured by this invention of simplicity (so often wanted in patents), solidity, durability, and economy, have not only been amply illustrated by the technical journals interested in the progress of mining operations in this country, but have at once been fully recognised by leading authorities in the mining world.



BOLTS, NUTS, AND COACH SCREWS.

ARCHER AND HARPER,

PROVIDENCE BOLT AND NUT WORKS, THE GREEN, DARLASTON,

Manufacturers of all kinds of Shipbuilders', Engineers', Coach, Wagon, and Fish Bolts; Coach Screws; Railway Spikes and Brobs; Horse-pressed and Forged Nuts, Rivets, Washers, &c., &c.

SHIPBUILDERS' AND RAILWAY STORES' CONTRACTORS.



COLEBROOK'S PATENT STEAM PUMPS,
FOR HIGH OR LOW LIFTS AND GENERAL PURPOSES.

SOLE MAKERS,—

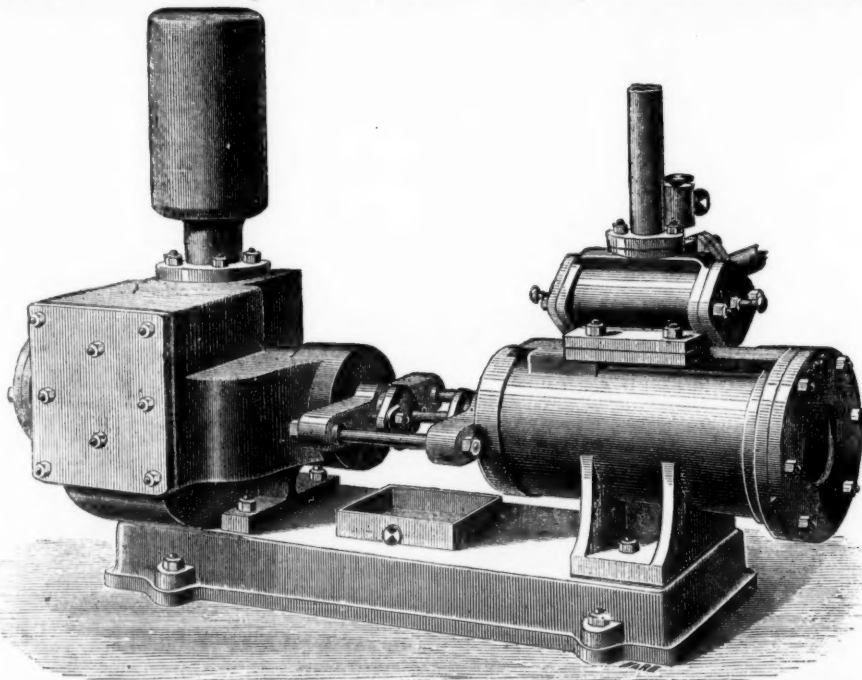
MAY AND MOUNTAIN,
BERKLEY ST., BROAD ST., BIRMINGHAM.

The accompanying Engraving represents a Steam Pump, suitable for general purposes; it possesses the following advantages over any other Steam Pump yet before the public:—

1st.—No tappets, eccentrics, levers, or other mechanical appliances are used to actuate the steam slide valve, but this office is performed by the exhaust steam.

2nd.—The only working parts in the steam cylinder are the piston and slide valve, and as there are no working parts in either the piston or cylinder covers, the full length of stroke is obtained.

3rd.—The slide valve is so easy of access that it can be examined, cleaned, and replaced in a few minutes, and it is impossible to make any error in replacing it



after examination, because it is immaterial which way it is inserted in the valve-box, whether one way or the other upwards, or whether end for end.

The Pump Valves are Colebrook's Patent, and are made in one piece. They are either of canvas, leather, india rubber, or other material, to suit the nature of the liquid to be pumped, and can be replaced in a very short time by any ordinary workman.

These Pumps are suitable for hot or cold water, hot or cold wort, sewage, ammoniacal liquor, tar, &c., and are adapted for use in breweries, chemical works, collieries, paper mills, dye-works, brick-yards, and for almost any other purpose.

SIZES AND PRICES OF COLEBROOK'S PATENT STEAM PUMPS.

Diameter of Steam Cylinder.....Inches	1½	3	3	3	3	4	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8
Diameter of Pump Cylinder.....Inches	1	1½	2	2½	3	2	2½	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4
Length of Stroke.....Inches	6	12	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Price	£12	£16	£17	£18	£19	£19	£20	£22	£25	£23	£28	£32	£26	£33	£36	£41	£30	£38	£41	£45	£52	£40
Diameter of Steam Cylinder.....Inches	8	8	8	8	9	9	9	9	9	10	10	10	10	10	10	12	12	12	12	12	12	...
Diameter of Pump Cylinder.....Inches	5	6	7	8	5	6	7	8	9	5	6	7	8	9	10	6	7	8	9	10	12	...
Length of Stroke.....Inches	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	...
Price	£45	£50	£56	£65	£50	£55	£60	£70	£81	£62	£68	£70	£80	£95	£100	£80	£85	£90	£100	£115	£135	...

AWARDED THE PRIZE MEDALS AT LEEDS, MANCHESTER, AND WREXHAM EXHIBITIONS, 1875 AND 1876.

HADFIELD'S STEEL FOUNDRY COMPANY,

ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

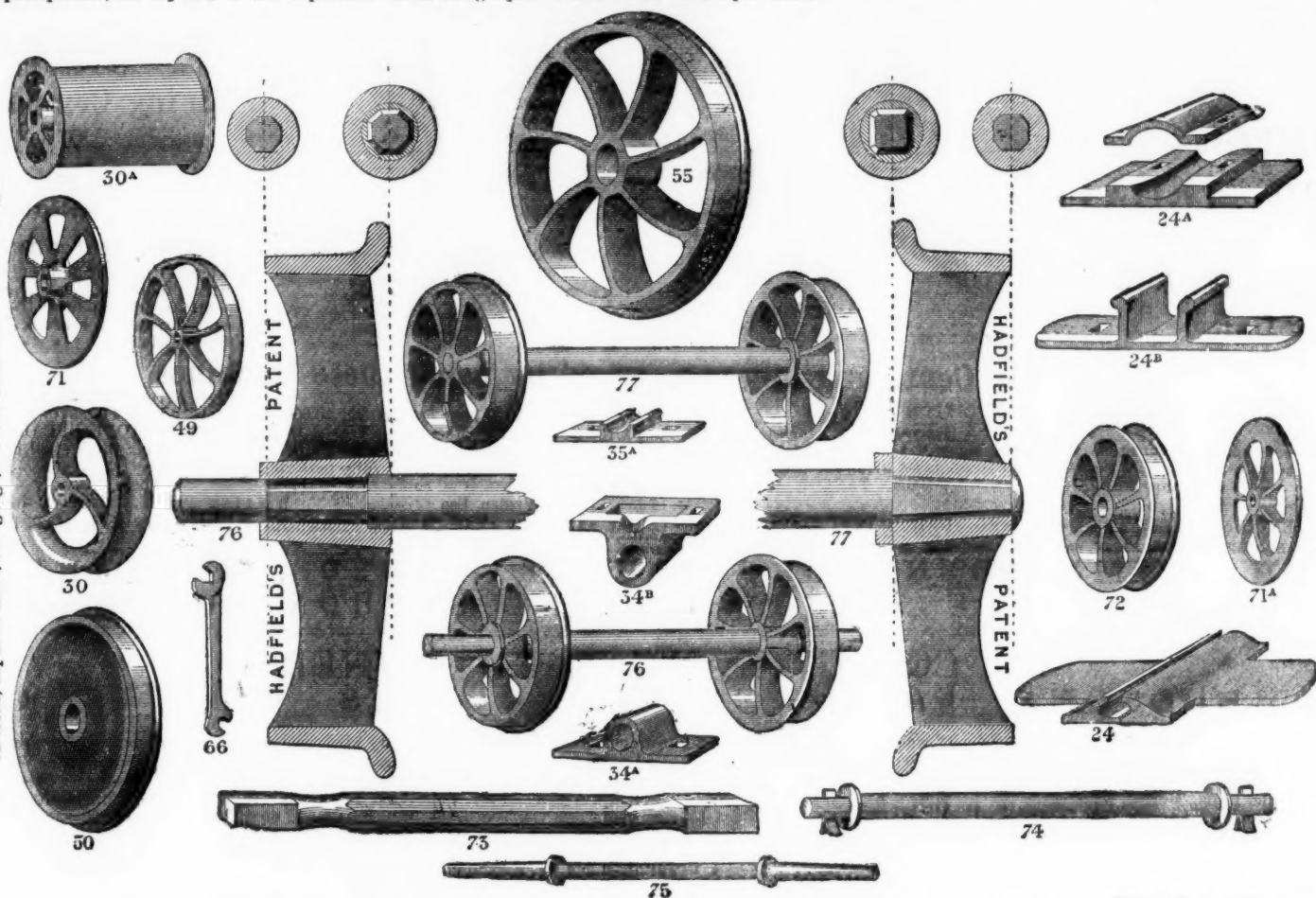
CRUCIBLE STEEL CASTINGS, for Engineering and Mining Purposes,

AND ARE THE SOLE MAKERS OF

HADFIELD'S CRUCIBLE STEEL WHEELS.

One of our departments is specially adapted for the manufacture of these Wheels (as shown below), for Collieries, Ironstone Mines, Slate Quarries, Ironworks, Lead Mines, &c., &c. We have made, and are now making, many HUNDRED THOUSANDS; and having Patented a New Method of Fitting Wheels upon axles, being cheap, effective, and expeditious, we can execute orders entrusted to us with promptitude, our capacity in this department alone being equal to about 2000 wheels per week.

N.B.—Prices per Set of Wheels and Axles, fitted complete, forwarded on receipt of diameter of wheel on tread, depth of tread, real gauge, and thickness of axle and rolling load.



[This Sheet of Drawings is Copyright.]

HADFIELD'S PATENT METHOD OF FITTING WHEELS UPON AXLES.

The advantages of the above system are that the Wheels being forced upon a Taper Square-ended Axle, by Machinery, and then riveted (the machine securing truth), it is impossible that they can come loose or get within gauge. They are very heavily fitted on, and run exceedingly true.

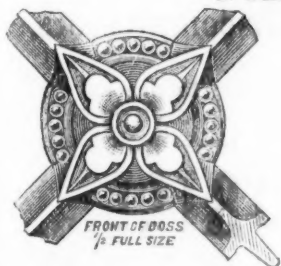
We construct the Arms of wheels upon the curved principle (as shown in the drawings above), consequently the shrinkage or cooling of the Castings is not interfered with, thus securing the greatest advantages of our very strong material.

CRUCIBLE CAST-STEEL WHEELS, when cast by us, are made from one-third to one-half lighter than Cast-Iron. They cannot be broken while working, even with rough usage, and will wear at least twelve times as long as Cast-Iron, thus saving animal and steam power, and reducing wear and tear immensely.

We would also draw special attention to our INCLINE PULLEYS and CAGE GUIDES, the adoption of which will prove highly advantageous.

HARRIS'S PATENT WROUGHT-IRON WINDOWS.

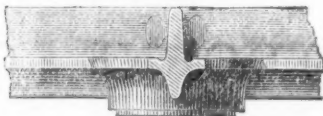
DOME AND OTHER ROOF LIGHTS, FLOOR AND PAVEMENT LIGHTS, ETC.



GREAT BRITAIN,
UNITED STATES OF AMERICA,

ARE STRONGER, SUPERIOR, AND CHEAPER
THAN ANY OTHER METAL SASHES YET
PRODUCED—COST LESS FOR GLAZING—
ARE AS CHEAP IN MANY CASES AS WOOD

PATENTED IN



FRANCE,
GERMANY, AND BELGIUM.

—CAN BE DESIGNED AND MANUFACTURED
TO SUIT ANY STYLE OF ARCHITECTURE
OR POSITION WHERE A WINDOW MAY BE
REQUIRED.

ARE BEING EXTENSIVELY USED IN—



Private Houses,
Parsonage Houses,
Farm Houses,
Churches,
Chapels,
Schools,

Lunatic Asylums, &c.,
Public Buildings, Banks,
Wharves, Warehouses,
Factories, Mills,
Breweries, &c.,
Engine Houses.

ILLUSTRATED CATALOGUES
ON APPLICATION.

ILLUSTRATED CATALOGUES
ON APPLICATION.

In Basement Storeys and Exposed Positions Shutters
and Guard Bars are dispensed with.

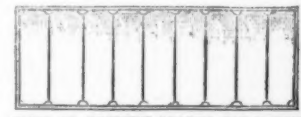
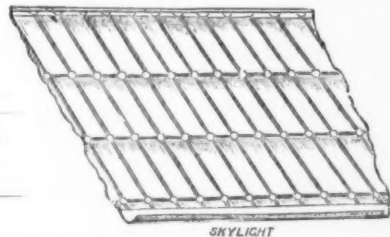
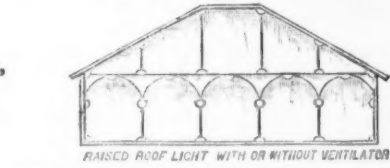
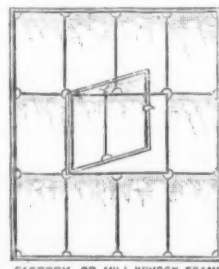
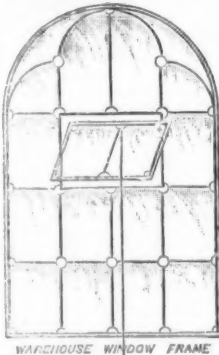
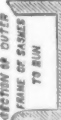
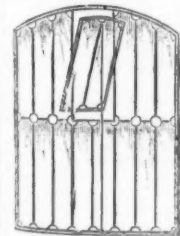
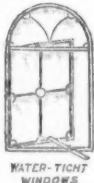
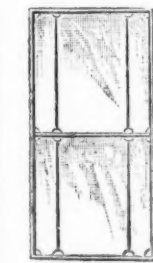
HOME AND

EXPORT.

SOLE MAKER—J. T. HARRIS, Engineer, Ironfounder, and Manufacturer,

SAFE, STRONG ROOM, AND PARTY WALL DOORS, AND EVERY KIND OF CONSTRUCTIONAL AND BUILDERS' IRONWORK, LIFTS, HOISTS, ELECTRIC BELLS AND TELEGRAPHS, &c.

90, CANNON STREET, LONDON, E.C.; AND BEAUFORT IRONWORKS, BRISTOL.



Security is obtained in
these Skylights with-
out Guard Bars, and
with less obstruction
to Light.



FLOOR OR PAVEMENT GRATING FOR GLAZING

H. R. MARSDEN, PATENTEE AND ONLY MAKER **BLAKE MACHINES,** OF THE WELL-KNOWN **ORE CRUSHERS AND STONE BREAKERS,**

WITH THE

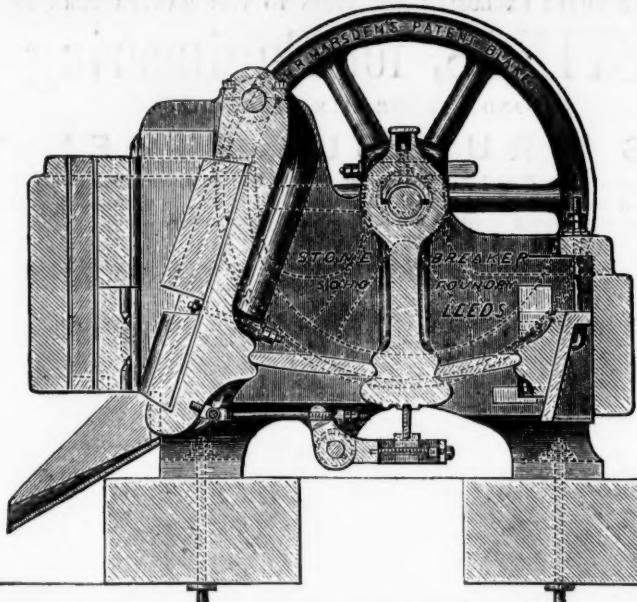
**New Patent Reversible
CRUSHING OR CUBING
JAWS,**

WHICH ARE CONSTRUCTED OF A PECULIAR
MIXTURE OF METAL, WEARING

**Four times longer than any
other.**

**60 GOLD AND
SILVER MEDALS.**

**OVER 2000 NOW IN
USE.**



**For Crushing to any degree
of Fineness, or Breaking
to a required size.**

**Her Majesty's Government
USE THESE MACHINES
EXCLUSIVELY,
ALSO ALL THE GREAT
Mining Companies of the
World.**

H. R. M. has long observed the want of cheaper
machines,
STONE AND ORE CRUSHERS,
And has at length, by means of improved appliances
for the production thereof, been enabled to reduce
the prices, yet keep up at the same time the well-
known strength of construction. Reduced prices
on application.

FIFTY per Cent., and upwards, saved by using these Machines.

TESTIMONIAL FROM MESSRS. JOHN TAYLOR AND SONS.

6, Queen-street-place, May 10, 1877.
DEAR SIR,—We have adopted your Stone Breakers at many of the mines under our manage-
ment, and are pleased to be able to state that they have in all cases given the greatest satisfac-
tion. We are, yours faithfully,
JOHN TAYLOR AND SONS.

DEAR SIR,—I have broken over 40,000 tons of very hard LIMESTONE into ROAD METAL, for
the Newport and other Road Trusts, in your PATENT STONE BREAKER, AND ALL WITH
ONE PAIR OF JAWS, which are STILL IN USE. I do not think at all, but am quite sure yours
are the only Machines which fully perform the work you set them out to do, and there are none
in the Show can at all compare with them. Yours, truly,
WILLIAM PRICE, Contractor, Gold Cliff, Monmouth.

INTENDING BUYERS ARE CAUTIONED AGAINST PURCHASING OR USING ANY INFRINGEMENT OF THE NUMEROUS PATENTS OF H. R. MARSDEN.
ILLUSTRATED CATALOGUES, TESTIMONIALS, and every information, on application to:—

**H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.
ONLY MAKER OF SAULT'S PATENT SYPHON CONDENSER.**

TO COLLIERY AND MINE OWNERS.

R. HUDSON'S PATENT STEEL CORVES OR "TRAMS."

Patented July, 1875, and January, 1877.

Entire new principle, saving three-quarters to 2 cwt. "dead" weight per corve. Will hold 2 to 3 cwt. more coal than the ordinary kind, without increasing the outside dimensions. Adopted by—
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Messrs. CLAYTON and SPEIGHT, Farnley, near Leeds. WM. BAIRD and SON, Coatbridge, near Glasgow.
Messrs. JAS. WORMALD and Sons, Rawdon, near Leeds. BETTISFIELD COLLIERY COMPANY, Bagillt, Wales.
KINGSWOOD COAL and IRON CO., near Bristol. EDFOURD COLLIERY COMPANY, near Bath.
MIDDLETON COLLIERY CO., near Leeds. | NEWTON COLLIERY, near Castleford. | Messrs. RUSHFORTH and Co., Adwalton, near Leeds. | Messrs. JAS. FUSSELL, Sons, and Co., Frome, Somersetshire.
T. VAUGHAN and Co.'s TRUSTEES, South Medomsley Colliery; and others.

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The Barrow Rock Drill COMPANY

Are NOW PREPARED to SUPPLY their DRILLS, the ONLY
ONES that have been SUCCESSFULLY WORKED in the
MINES of CORNWALL. At DOLCOATH MINE, in the
HARDEST known ROCK, a SINGLE MACHINE has, since
its introduction in July, 1876, driven MORE THAN THREE
TIMES the SPEED of HAND LABOUR, and at TWENTY PER
CENT. LESS COST PER FATHOM.

In ordinary ends two machines may be worked together,
and at a proportionately increased speed. They are strong,
light, and simple, easily worked, and adapted for ends and
stopes, and the sinking of winzes and shafts.

The company are also prepared to SUPPLY COMPRESSORS,
and all necessary appliances for working the said Drills.

Apply to—
**LOAM AND SON,
LISKEARD, CORNWALL.**

IMPROVED STEEL WIRE FOR ROPES.

WEBSTER & HORSFALL,
(ORIGINAL PATENTEES),

MANUFACTURERS OF IMPROVED STEEL WIRE FOR ROPES
FOR COLLIERIES,

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SOLE MANUFACTURERS OF THE HOMOGENEOUS WIRE for the
ATLANTIC CABLES of 1865 and 1866.

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THE GREAT ADVERTISING MEDIUM FOR WALES.
THE SOUTH WALES EVENING TELEGRAM
(DAILY), and
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the largest and most widely circulated papers in Monmouthshire and South Wales
CHIEF OFFICES—NEWPORT, MON.; and at CARDIFF.

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South Wales Weekly Gazette, and advertisements ordered for not less than six
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The IRON and COAL TRADES' REVIEW is extensively circulated amongst the
Iron Foundries, Manufacturers, and Consumers, Coalowners, &c., in all the iron
and coal districts. It is, therefore, one of the leading organs for advertising every
description of Iron Manufactures, Machinery, New Inventions, and all matters
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STANDS UNRIVALLED

**For Tunnels, Mines, Quarries, Harbour Works, Cutting
Blocks of Granite, &c.**

The working parts are made of the toughest steel and phosphor-bronze—steel castings are also used—so
as to combine strength with light weight.



AIR-COMPRESSING MACHINERY

Of the simplest and best construction.

Combined Water-pressure Engines and Air-compressors,
Giving most excellent results.

ULLATHORNE AND CO., Mechanical and Consulting Engineers,
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THE ROANHEAD ROCK DRILL.

BY ROYAL LETTERS PATENT.

This justly-celebrated Rock Drill, the only one invented that will
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It has been most successfully worked in the well-known Hematite Mines of Lancashire and Cumberland. Will drive 50 to 60 ft.
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simple rock drill ever invented, and cannot with fair usage get out of order.

Plans, Estimates, including Compressors, and all other Mining Machinery, supplied on application to the sole makers,—

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Canal Head Foundry and Engineering Works, Ulverston.

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(WORKS AND OFFICES ADJOINING CRADLEY STATION),
Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,
also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES,
FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,
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Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.
STOURBRIDGE FIRE BRICKS AND CLAY.